User's Manual

EPIA-SN

Version 1.02

December 20, 2007

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord in such a way that people cannot step on it. Do not place anything over the power cord.
8. Always unplug the power cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged
    - Liquid has penetrated into the equipment
    - The equipment has been exposed to moisture
    - The equipment has not work well or you cannot get it work according to User's Manual.
    - The equipment has dropped and damaged
    - If the equipment has obvious sign of breakage
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, OR IN A STORAGE TEMPERATURE ABOVE 60°C (140°F). THE EQUIPMENT MAY BE DAMAGED.

CAUTION:
Explosion or serious damage may occur if the battery is incorrectly replaced. Replace only with the same or equivalent battery type recommended by the manufacturer.

BOX CONTENTS

- ☒ One VIA Mini-ITX Mainboard
- ☒ One ATA-133/100/66 IDE Ribbon Cable
- ☒ One Driver and Utilities CD
- ☒ One IO Bracket
- ☒ One Quick Installation Guide

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CHAPTER 1

Specifications

The ultra-compact and highly integrated VIA EPIA-SN uses the Mini-ITX mainboard form-factor developed by VIA Technologies, Inc. as part of the company's open industry-wide total connectivity initiative. The mainboard comes with a VIA Processor, boasting of ultra-low power consumption, cool and quiet operation.

MAINBOARD SPECIFICATIONS

CPU

- VIA C7® 1.0GHz / 1.8GHz NanoBGA2 processor

Chipset

- VIA CN896 North Bridge
- VIA VT8251 South Bridge

Graphics

- Integrated VIA Chrome9™ HC Integrated Graphics with 2D/3D and Video Acceleration

Audio

- VIA VT1708A High Definition Audio Codec

Memory

- 2 x DDR2 667/533 DIMM slot (up to 4 GB)

Expansion Slot

- 1 x 16-Lane PCI Express slot
- 1 x 32-bit Mini-PCI slot

IDE

- 1 x UltraDMA 133/100/66 IDE port

Serial ATA

- 4 x S-ATA II connectors

LAN

- VIA VT6103L 10/100 Mbps Fast Ethernet Controller
- VIA VT6130 PCI Express Gigabit Ethernet Controller

> **Note:**
> System resources (such as BIOS, PCI, etc.) require physical memory address locations that reduce available memory addresses above 3 GB. This may result in less than 4 GB of memory being available to the operating system and applications.

Back Panel I/O Ports

- 1 x PS2 Mouse port
- 1 x PS2 Keyboard port
- 1 x Serial port
- 2 x RJ45 LAN port
- 1 x VGA port
- 4 x USB 2.0 ports
- 3 x Audio jacks: Line-out, Line-in and MIC-in (Horizontal, Smart 5.1 supported)

Onboard I/O Connectors

- 1 x USB pin connector for 2 additional USB 2.0 ports
- 1 x LPC header
- 1 x SMBus pin connector
- 1 x Serial port pin connector (COM 2 5V/12V selectable)
- 1 x LVDS/DVI module connector (J2)
- 1 x CIR pin connector (switchable for KB/MS)
- 1 x SIR pin connector (IRDA 1.0)
- 1 x CF (Compact Flash) Type I connector (shared with IDE1)
- 1 x Front Panel pin connector
- 1 x Front –panel Audio pin connector for Line-out and MIC-in
- 1 x SPDIF out pin connector
- 1 x Digital I/O pin connector
- 2 x Fan connectors for CPU and System fans
- 1 x ATX power connector

Onboard TPM (Trust Platform Module)

- Infineon SLB9635TT 1.2

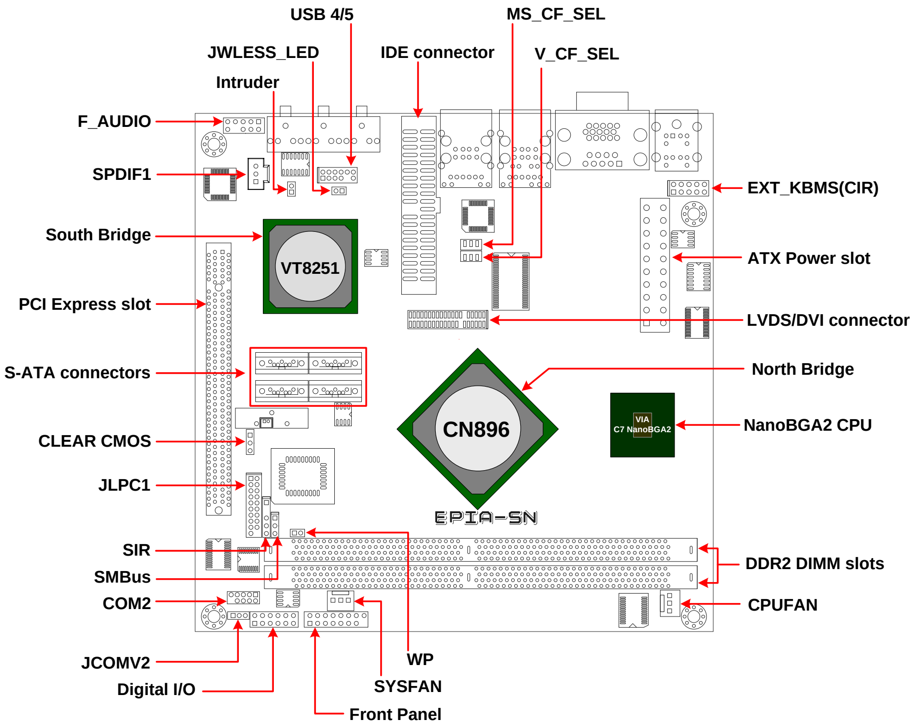
BIOS

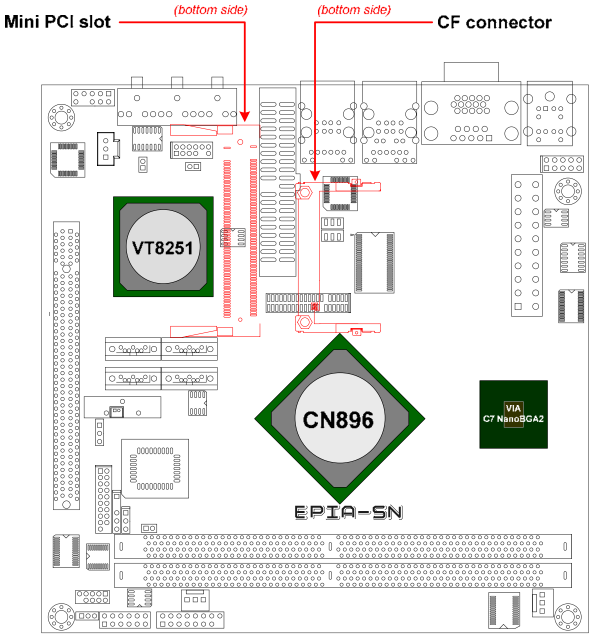
- AMI BIOS with LPC 4/8Mbit flash memory capacity

Form Factor

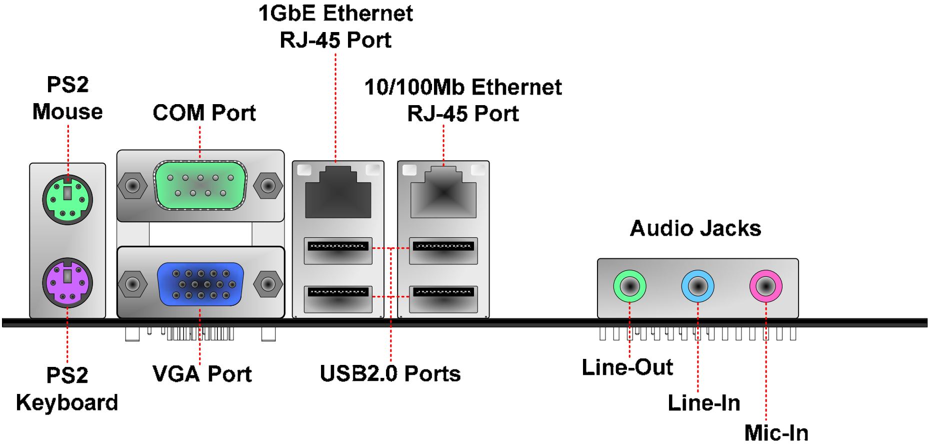
- Mini-ITX (6-layer)
- 17cm X 17cm

MAINBOARD LAYOUT




Mini PCI slot
(bottom side)
(bottom side)
CF connector
VT8251
CN896
VIA
C7 NanoBGA2
EPIA-SN

BACK PANEL LAYOUT



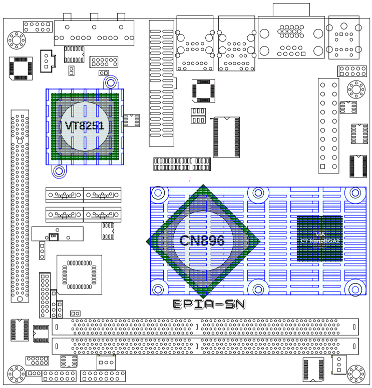
CHAPTER 2

Installation

This chapter provides you with information about hardware installation procedures. It is recommended to use a grounded wrist strap before handling computer components. Electrostatic discharge (ESD) can damage some components.

CPU

The VIA EPIA-SN Mini-ITX mainboard can support VIA C7 1.0GHz / 1.8GHz NanoBGA2 Processor. The VIA processor C7 1.8GHz requires a heatsink with fan to provide sufficient cooling.



CPU Fan and System Fan: CPUFAN and SYSFAN

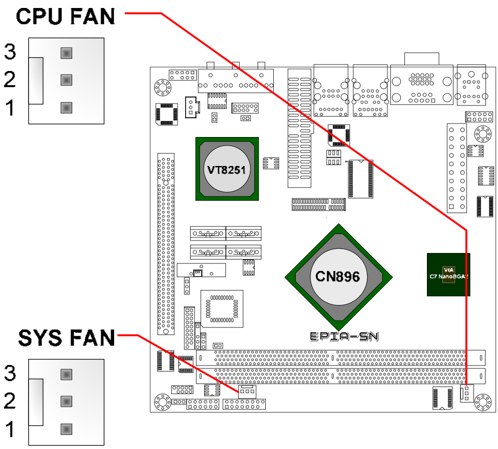
The CPUFAN (CPU fan) and SYSFAN (system fan) run on +12V and maintain system cooling. When connecting the wire to the connectors, always be aware that the red wire (positive wire) should be connected to the +12V. The black wire is Ground and should always be connected to GND.

CPUFAN

Pin	Signal
1	FANIO
2	+12V
3	GND

SYSFAN

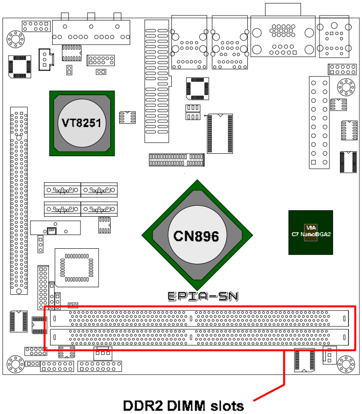
Pin	Signal
1	FANIO
2	+12V
3	GND

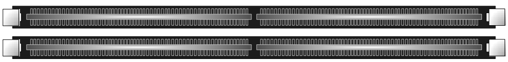


MEMORY MODULE INSTALLATION

Memory Slot: DDR2 DIMM

The VIA EPIA-SN Mini-ITX mainboard provides two 240-DIMM slots for DDR2 667/533 SDRAM memory modules and supports memory sizes up to 4GB.





DDR2 SDRAM Module Installation Procedures

- Locate the DIMM slot in the motherboard.
- Unlock a DIMM slot by pressing the retaining clips outward.
- Align a DIMM on the socket such that the notch on the DIMM matches the break on the slot.
- Firmly insert the DIMM into the slot until the retaining clips snap back in place and the DIMM is properly seated.

Available DDR2 SDRAM Configurations

Refer to the table below for available DDR2 SDRAM configurations on the mainboard.

Slot	Module Size	Total
DIMM1	64MB, 128MB, 256MB, 512MB, 1GB, 2GB	64MB-2GB
DIMM2	64MB, 128MB, 256MB, 512MB, 1GB, 2GB	64MB-2GB
Maximum supported system memory		64MB-4GB

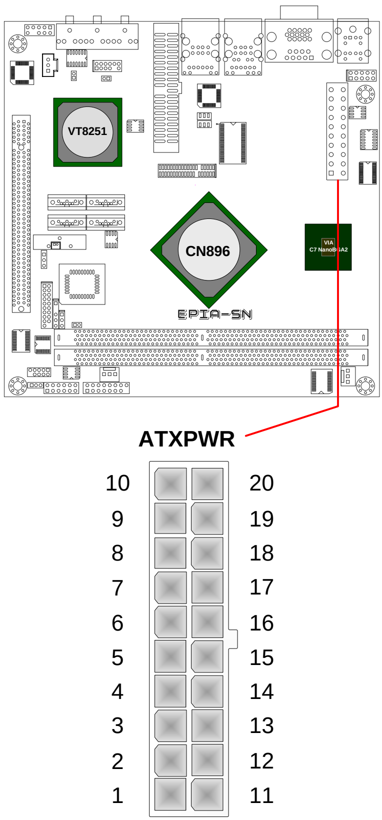
Connecting the Power Supply

The VIA EPIA-SN Mini-ITX mainboard supports a conventional ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed correctly to ensure that no damage will be caused.

ATX 20-Pin Power Connector

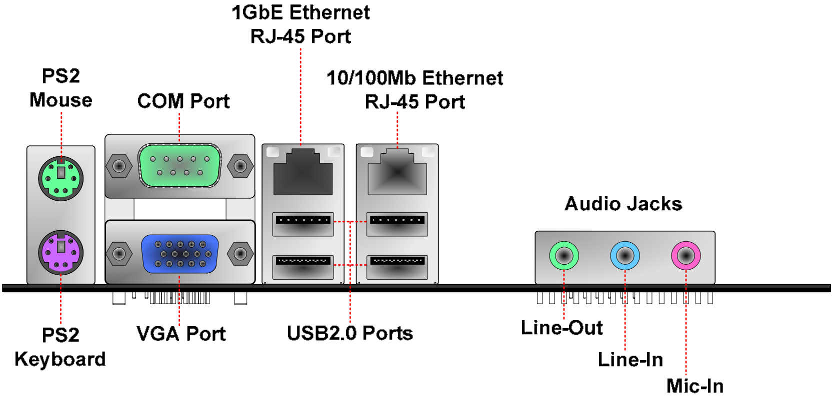
To connect the power supply, make sure the power plug is inserted in the proper orientation and the pins are aligned. Then push down the plug firmly into the connector.

Pin	Signal
1	+3.3V
2	+3.3V
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	Power Good
9	+5V Standby
10	+12V
11	+3.3V
12	-12V
13	GND
14	Power Supply On
15	GND
16	GND
17	GND
18	-5V
19	+5V
20	+5V

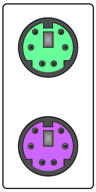


Back Panel Ports

The back panel has the following ports:

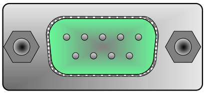


Mouse and Keyboard



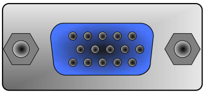
The connector above is for a PS/2 mouse, and the one below is for a PS/2 keyboard.

Serial port: COM



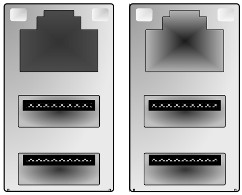
The 9-pin COM port is for pointing devices or other serial devices.

VGA Port



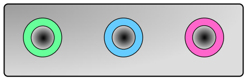
The 15-pin female VGA connector can be used to connect to any analog VGA monitor.

RJ45 LAN Port and USB Connectors



The mainboard provides a standard RJ-45 (10/100 Ethernet PHY and PCIe Gigabit Ethernet) and USB 2.0 ports. These ports allow connection to a Local Area Network (LAN) through a network hub and USB 2.0 devices.

Audio Port



The Line-Out jack is for connecting to external speakers or headphones. The Line-In jack is for connecting to an external audio device such as a CD player, tape player, etc. The Mic jack is for connecting to a microphone.

> **Note:**
> The audio ports can be switched to Smart 5.1 6-channel audio output. You can enable the function by clicking the “Vinyl Audio” icon on your desktop after installing the audio driver.

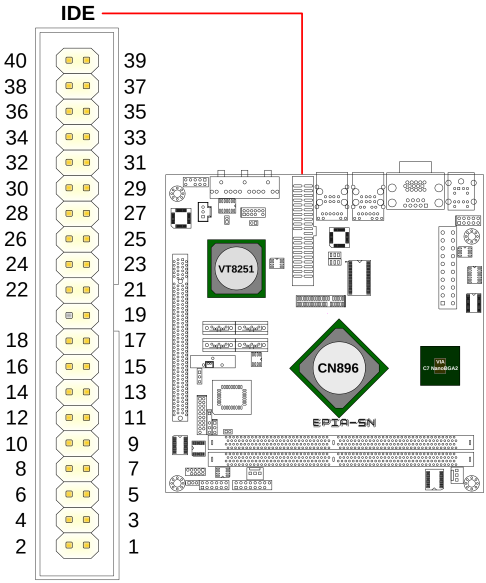
After completing the previous installation, connect the speakers to the 3-jack connectors on the back panel.

CONNECTORS

IDE Connector: IDE

The mainboard has an Ultra DMA 133/100/66 controller. You can connect up to two IDE devices in any combination.

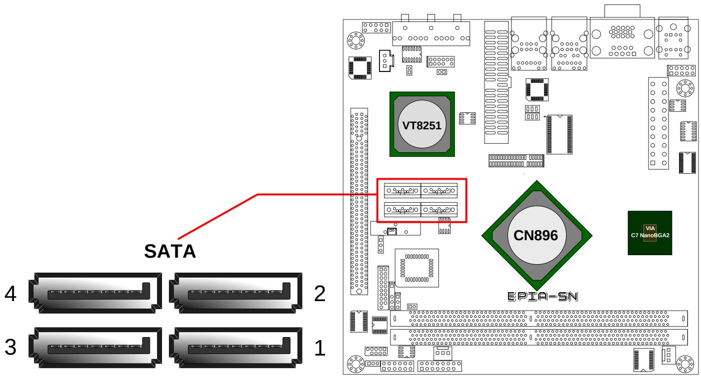
Pin	Signal	Pin	Signal
1	#IDE_RST	2	GND
3	PD_7	4	PD_8
5	PD_6	6	PD_9
7	PD_5	8	PD_10
9	PD_4	10	PD_11
11	PD_3	12	PD_12
13	PD_2	14	PD_13
15	PD_1	16	PD_14
17	PD_0	18	PD_15
19	GND	20	--
21	#PD_REQ	22	GND
23	#PD_IOW	24	GND
25	#PD_IOR	26	GND
27	#PD_RDY	28	PRIMARY
29	#PD_ACK	30	GND
31	PD_IRQ15	32	--
33	PD_A1	34	IDE_DMADET
35	PD_A0	36	PD_A2
37	#PD_CS1	38	#PD_CS3
39	#HD_LED1	40	GND



If two drives are connected to a single cable, the jumper on the second drive must be set to slave mode. Refer to the drive documentation supplied by the vendor for the jumper settings.

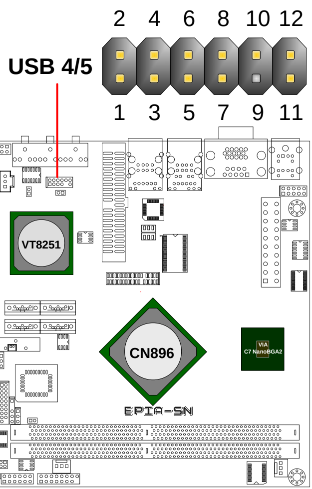
Serial ATA II Connectors: SATA1 up to SATA4

These next generation connectors support the right angle Serial ATA cables for primary internal storage devices. The current Serial ATA interface allows up to 300MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra DMA).



USB Pin Connector: USB

The mainboard provides 4 USB pin connectors and one USB pin header (allowing up to 2 additional USB2.0 ports). Therefore mainboard can support up to 6 USB2.0 ports. These ports can be used to connect high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, and modems.

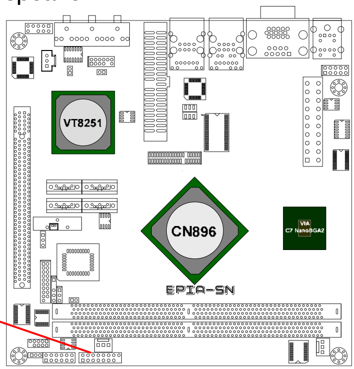


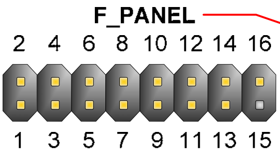
Pin	Signal	Pin	Signal
1	VUSB4	2	VUSB4
3	USBD_T4-	4	USBD_T5-
5	USBD_T4+	6	USBD_T5+
7	GND	8	GND
9	--	10	W_LESS-LED
11	GND	12	-RF_ON-GPO9

Case Connector: F_PANEL

The F_PANEL pin header allows you to connect the power switch, reset switch, power LED, sleep LED, HDD LED and the case speaker.

Pin	Signal	Pin	Signal
1	+PWR_LED	2	+HD_LED
3	+PWR_LED	4	-HD_LED
5	-PWR_LED	6	PW_BN
7	SPEAK+	8	GND
9	--	10	RST_SW
11	--	12	GND
13	SPEAK-	14	+SLEEP_LED
15	Key	16	-SLEEP_LED





Power LED (PWR_LED)

The LED will light when the system is on. If the system is in S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, the LED will blink.

HDD LED (HD_LED)

HDD LED shows the activity of a hard disk drive. Avoid turning the power off when the HDD LED is still on. Connect the HDD LED from the system case to this pin.

Power Switch (PW_BN)

Connect to a 2-pin power button switch. Pressing this button will turn the system power on or off.

Speaker (SPEAK)

The speaker from the system case is connected to this pin.

Reset Switch (RST_SW)

The reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting the system, if the HDD is still working. Connect the reset switch from the system case to this pin.

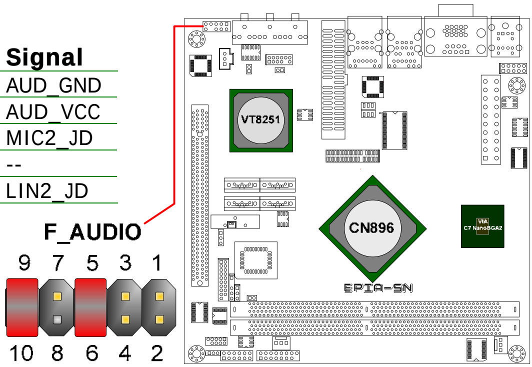
Sleep LED (SLEEP_LED)

The SLEEP LED is lit when the system is in the S1 (POW-Power On Suspend)

Front Panel Audio Connector: F_AUDIO

This is an interface for the VIA front panel audio cable that allow convenient connection and control of audio devices. By default, the pins labeled AUD_FPOUT_R and the pins AUD_FPOUT_L are shorted with jumper caps. Remove the caps only when you are connecting the front panel audio cable.

Pin	Signal	Pin	Signal
1	AUD_MIC1	2	AUD_GND
3	AUD_MIC2	4	AUD_VCC
5	AUD_FPOUT_R	6	MIC2_JD
7	FRONT_IO_SENSE	8	--
9	AUD_FPOUT_L	10	LIN2_JD

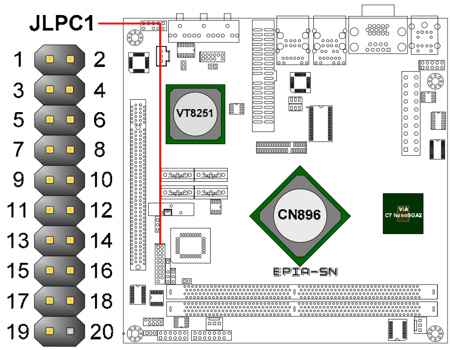


Note:
If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumper in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.

LPC Connector: JLPC1

This pin connector is for LPC devices.

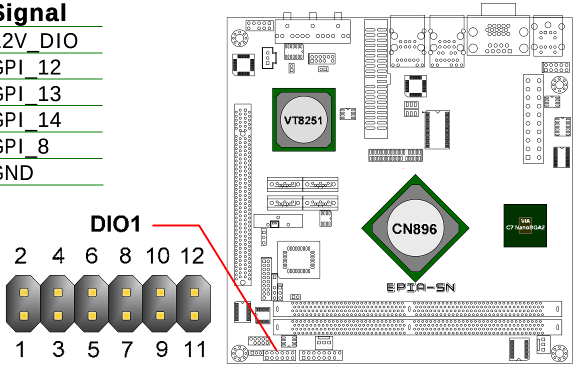
Pin	Signal	Pin	Signal
1	LAD1	2	LPCIF_33_CLK
3	-PCIRSTX	4	GND
5	LAD0	6	LPCIF_48_CLK
7	LAD2	8	-LFRAME
9	SERIRQ	10	LAD3
11	-LDRQ1	12	-EXTSMI
13	+5V	14	+3.3V
15	+5V	16	+3.3V
17	GND	18	GND
19	GND	20	--



Digital I/O Connector: DIO1

General purpose input and output for POS systems.

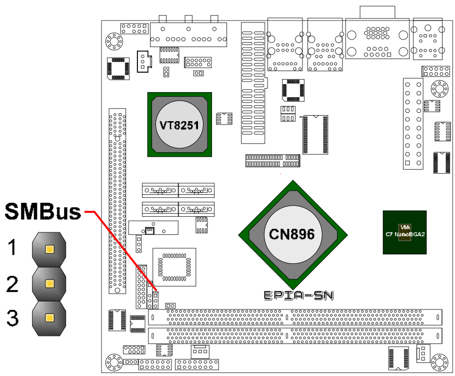
Pin	Signal	Pin	Signal
1	5V_DIO	2	12V_DIO
3	GPO_1	4	GPI_12
5	GPO_4	6	GPI_13
7	GPO_6	8	GPI_14
9	GPO_7	10	GPI_8
11	GND	12	GND



System Management Bus Connector: SMBus

This pin header allows you to connect SMBus (System Management Bus) devices. Devices communicate with a SMBus host and/or other SMBus devices using the SMBus interface.

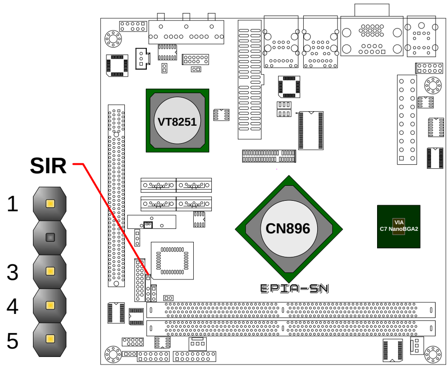
Pin	Signal
1	SMBCK
2	SMBDT
3	GND



Fast IrDA Infrared Module Connector: SIR

This pin header is used to connect to an IrDA module. The BIOS settings must be configured to activate the IR function.

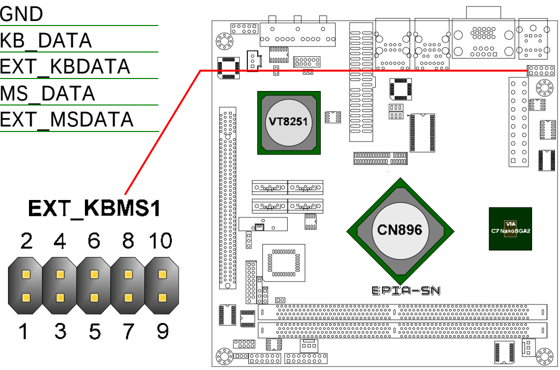
Pin	Signal
1	+5V
2	--
3	IRRX
4	GND
5	IRTX



KBMS (or CIR) Connector: EXT_KBMS1

The mainboard provides a PS2 pin header to attach a PS2 keyboard and mouse.

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	KB_CLK	4	KB_DATA
5	EXT_KBCLK	6	EXT_KBDATA
7	MS_CLK	8	MS_DATA
9	EXT_MSCLK	10	EXT_MSDATA



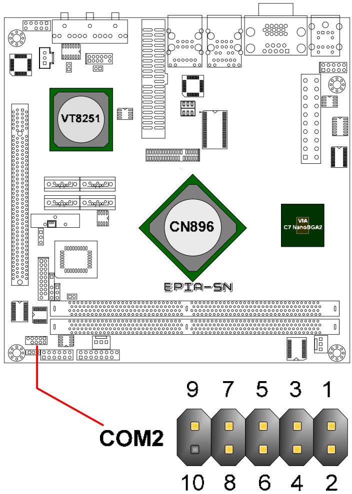
Note:

When the pin header is not in use. Please short pin 3&5, pin 4&6, pin 7&9 and pin 8&10.

Serial Port Connector: COM2

COM2 pin header can be used to attach additional port for serial mouse or other serial devices.

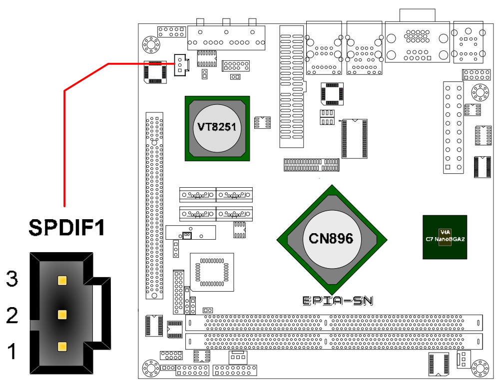
Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	--



Digital Audio Connector: SPDIF1

This connector is for connecting the Sony Philips Digital Interface (S/PDIF) bracket. The S/PDIF output provides digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder. The feature is available only with stereo system that has digital output function.

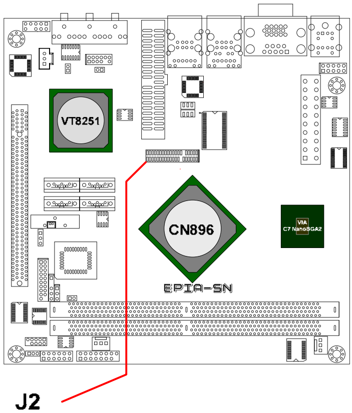
Pin	Signal
1	+5V
2	SPDIF_OOT
3	GND

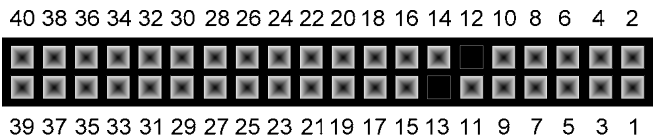


LVDS/DVI Panel Connector: J2

This connector works the interface to multi display devices. An additional daughter cards is required for a certain display support. Daughter cards for LVDS and DVI are currently available respectively.

Pin	Signal	Pin	Signal
1	+12V	2	+5V
3	+12V	4	+5V
5	+12V	6	+5V
7	GND	8	GND
9	+3.3V	10	GND
11	+3.3V	12	--
13	--	14	DVP2D1
15	DVP2D0	16	DVP2D3
17	DVP2D2	18	DVP2D5
19	DVP2D4	20	GND
21	GND	22	DVP2D9
23	DVP2D6	24	DVP2D7
25	DVP2D8	26	DVP2D11
27	DVP2D10	28	GND
29	GND	30	DVP2CLK
31	DVP2DE	32	GND
33	DVP2VS	34	ENVDD-2
35	DVP2HS	36	ENVBLD-2
37	GND	38	-PCIRSTX
39	SPD1	40	SPCLK1





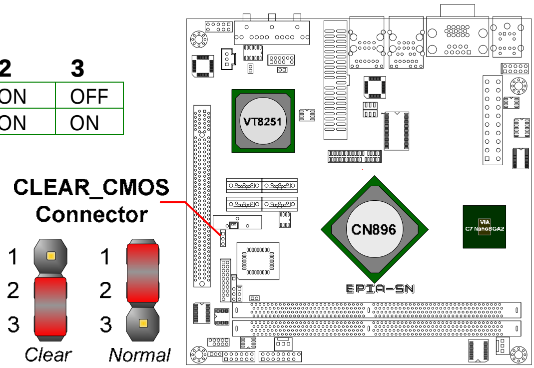
JUMPERS

The mainboard provides jumpers for setting some mainboard functions. This section will explain how to change the settings of the mainboard functions using the jumpers.

Clear CMOS Connector: CLEAR_CMOS

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. To reset the CMOS settings, set the jumper on pins 1 and 2 while the system is off. Return the jumper to pins 2 and 3 afterwards. Setting the jumper while the system is on will damage the mainboard.

Setting	1	2	3
Normal Operation	ON	ON	OFF
Clear CMOS setting	OFF	ON	ON



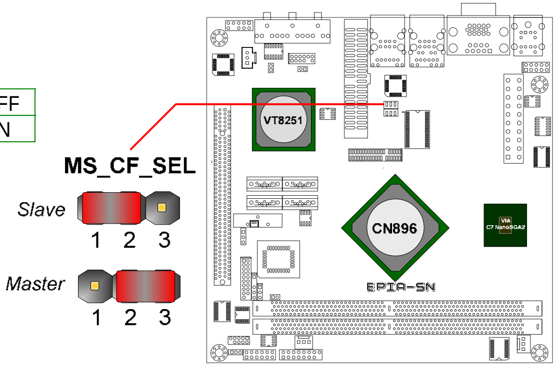
Warning:

Except when clearing the RTC RAM, never remove the cap on CLEAR_CMOS jumper default position. Removing the cap will cause system boot failure. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

MS_CF_SEL

This jumper determines the working state of the CF connector. The default value is Master.

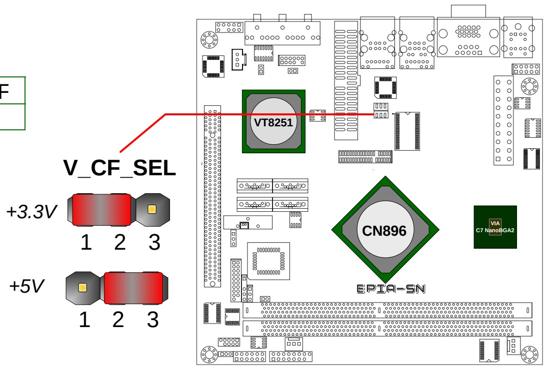
Setting	1	2	3
Slave	ON	ON	OFF
Master	OFF	ON	ON



Voltage Selector for the CF Connector: V_CF_SEL

This VCC selector jumper is to determine the input voltage of the CF connector. The default value is +3.3V.

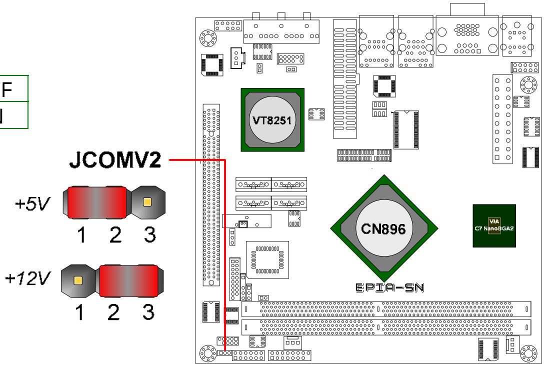
Setting	1	2	3
+3.3V	ON	ON	OFF
+5V	OFF	ON	ON



Voltage Selector for COM Connectors: JCOMV2

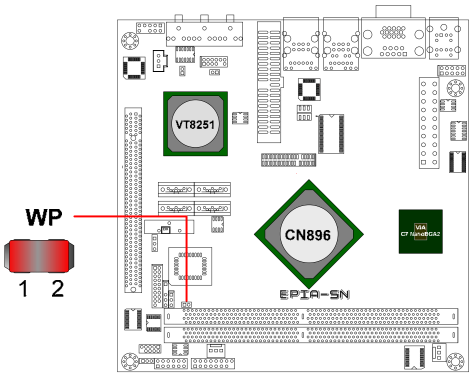
This VCC selector is to determine the input voltage of each COM connector.

Setting	1	2	3
+5V	ON	ON	OFF
+12V	OFF	ON	ON



ROM Write Protection: WP

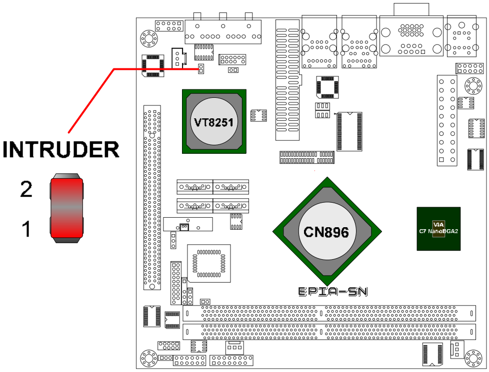
This jumper allows you to protect from flashing the BIOS. ROM Write Protection setting: pin1 = WP#, pin2 = GND, short 1-2.



INTRUDER

This pin connector is for chassis intrusion switch connector. This is not a default function supported by BIOS.

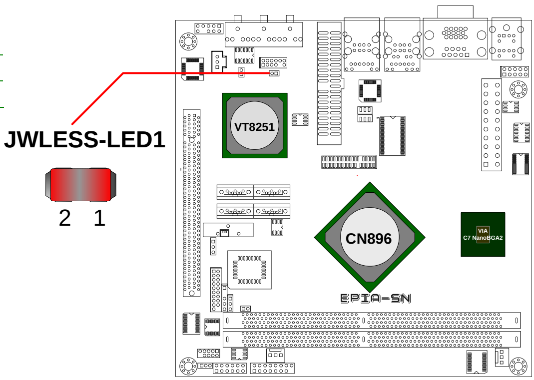
Pin	Signal
1	INTRUDER
2	GND



Wireless LED1: JWLESS-LED1

This pin connector is for the LED indicator of VIA VT6656 wireless LAN USB module.

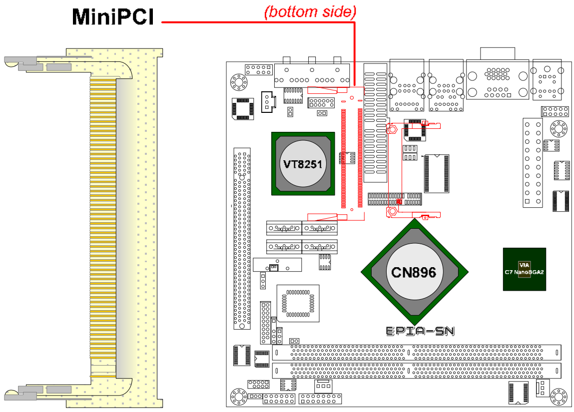
Pin	Signal
1	+3.3V
2	W_LESS_LED



SLOTS

Mini Peripheral Component Interconnect: MiniPCI

The MiniPCI slot allows you to insert a MiniPCI expansion card. First unplug the power supply before adding or removing expansion cards. Read the documentation for the expansion card to see if any changes to the system are necessary.



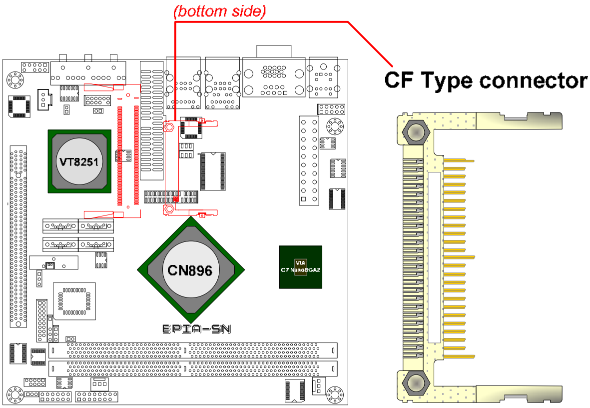
PCI Interrupt Request Routing

The IRQ (interrupt request line) are hardware lines over which devices can send interrupt signals to the microprocessor. The “PCI & LAN” IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
MiniPCI Slot	INT B#	INT C#	INT D#	INT A#

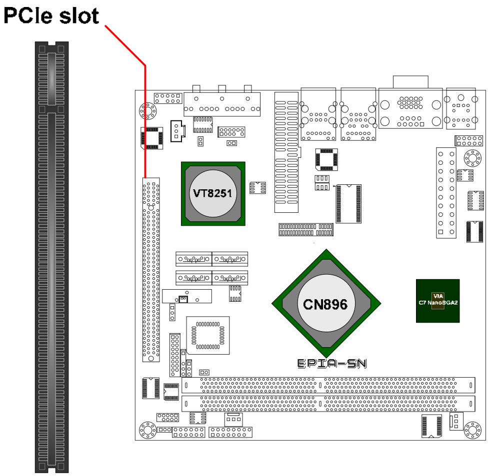
Compact Flash Type I Connector: CF

This CF connector allows you to connect to a passive 50-pin Type I adapter.



PCI Express: PCIe x16

The PCI Express slot allows you to insert a PCI Express x16 graphics expansion card. First unplug the power supply before adding or removing expansion cards. Read the documentation for the expansion card to see if any changes to the system are necessary.



CHAPTER 3

BIOS Setup

This chapter gives a detailed explanation of the BIOS setup functions.

ENTERING SETUP

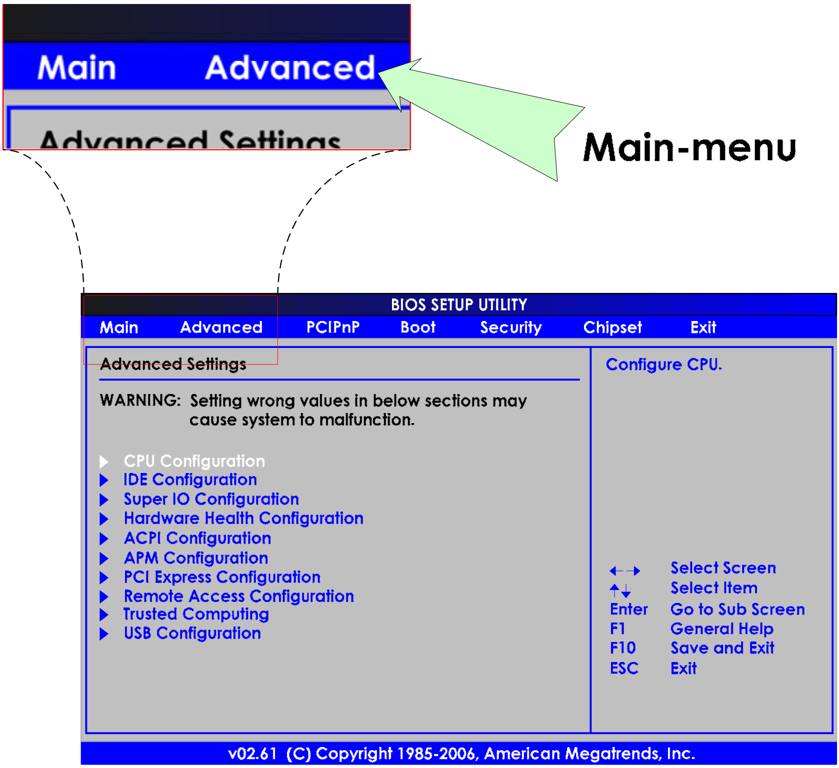
Power on the computer and press <Delete> during the beginning of the boot sequence to enter the BIOS setup menu. If you missed the BIOS setup entry point, you may restart the system and try again.

CONTROL KEYS

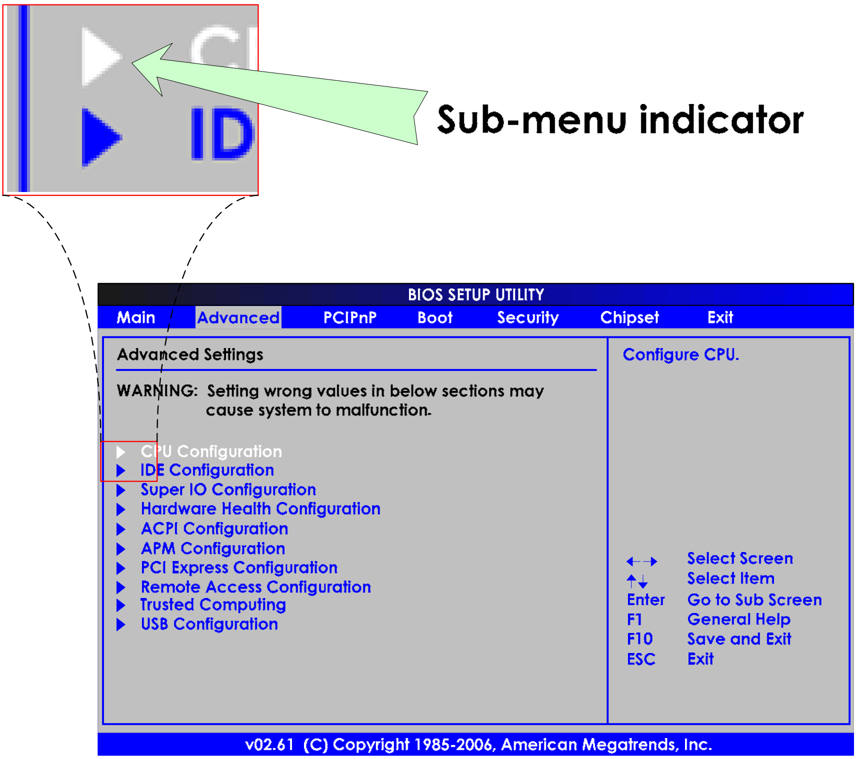
Keys	Description
↑	Move to the previous item
↓	Move to the next item
←	Move to the item in the left side
→	Move to the item in the right side
Enter	Select the item or field
Esc	Exit from sub-menu. And discard changes and exit setup
Tab	Select the item or field
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F8	Load the default CMOS value from Fail-Safe default table
F7	Discard all changes
F9	Load Optimized defaults
F10	Save all the configuration changes and exit

NAVIGATING THE BIOS MENUS

The main menu displays all the BIOS setup categories. Use the Left/Right and Up/Down arrow keys to select any item or sub-menu. Description of the selected/highlighted category is displayed at the bottom of the screen.



An arrow symbol next to a field indicates that a sub-menu is available (see figure below). Press <Enter> to display the sub-menu. To exit the sub-menu, press <Esc>.

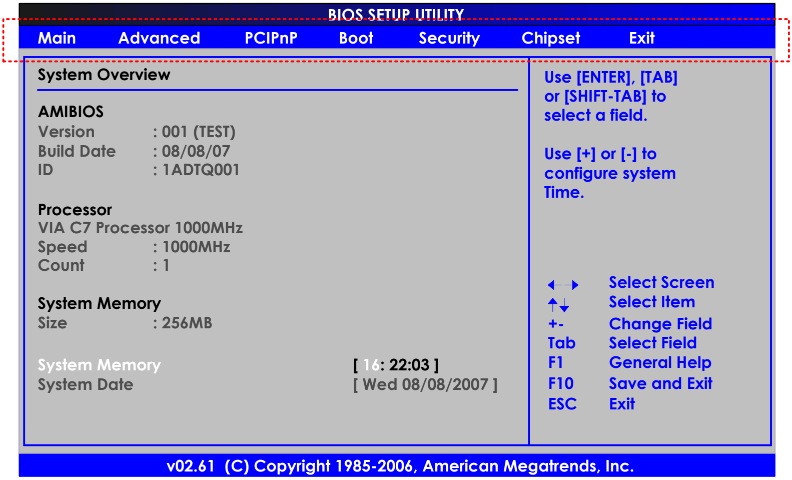


GETTING HELP

The BIOS setup program provides a “General Help” screen. You can display this screen from any menu/sub-menu by pressing <F1>. The help screen displays the keys for using and navigating the BIOS setup. Press <Esc> to exit from sub-menu, and discard changes and exit setup.

MAIN MENU

The Main Menu contains six setup functions and one exit choice. Use the "left/right" arrow keys to select the main menu categories and press the "up/down" arrow keys to select items. Press "Enter" to accept or enter a sub-menu.



Main (System Overview)

Use this menu to set basic system configurations.

Advanced (Advanced Settings)

Use this menu to configure your system and set the advanced BIOS features.

PCIPnP (Advanced PCI/PnP Settings)

Use this menu to set the PCI and PnP configurations.

Boot (Boot Settings)

Use this menu to set the boot setting configuration and device priority.

Security (Security Settings)

Use this menu to configure the security features.

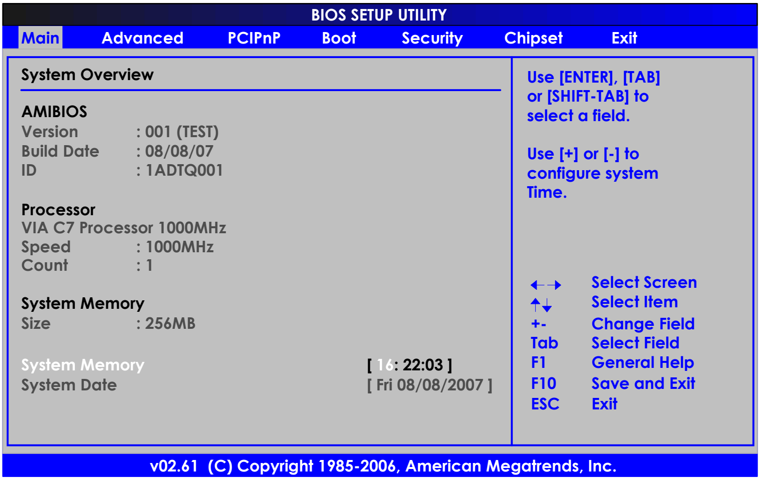
Chipset (Advanced Chipset Settings)

Use this menu to set specific chipset feature and optimize system performance.

Exit (Exit Options)

Use this menu option to load BIOS default setting, save BIOS setting changes, discard BIOS setting changes and exit setup.

MAIN (SYSTEM OVERVIEW)



AMIBIOS

Show the BIOS version, build date and ID.

Processor

Show the total number, type, speed of VIA processor used in the system.

System Memory

Total memory size used in the system.

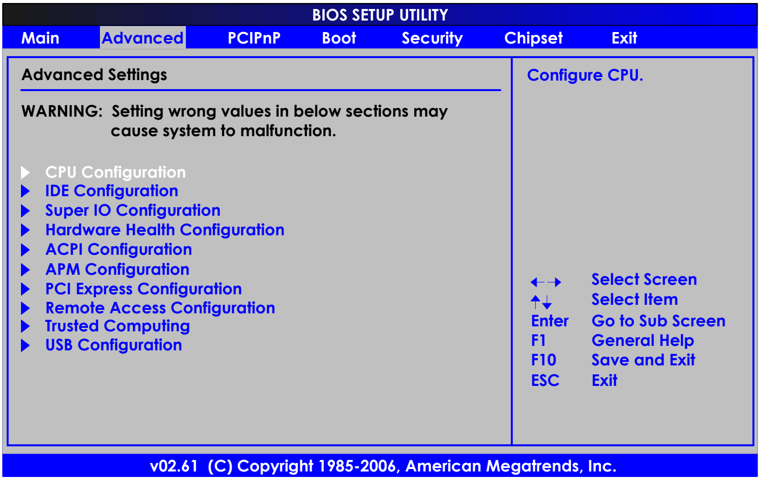
System Time

The time format is [Hour : Minute : Second]

System Date

The date format is [Day, Month : Date Year]

ADVANCED (ADVANCED SETTINGS)



CPU Configuration

Configure the processor.

IDE Configuration

Configure the IDE (Integrated Drive Electronics) devices.

Super IO Configuration

Configure Super IO chipset.

Hardware Health Configuration

Configure/monitor the hardware health.

ACPI Configuration

Section for Advanced ACPI Configuration.

APM Configuration

Section for Advanced Power Management (AMP) Configuration.

PCI Express Configuration

Configure PCI Express.

Remote Access Configuration

Configure Remote Access.

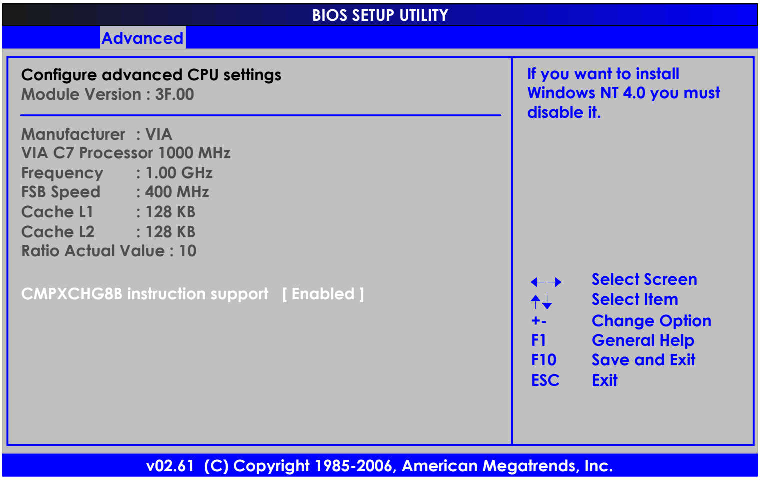
Trusted Computing

Configure settings related to Trusted Computing innovations.

USB Configuration

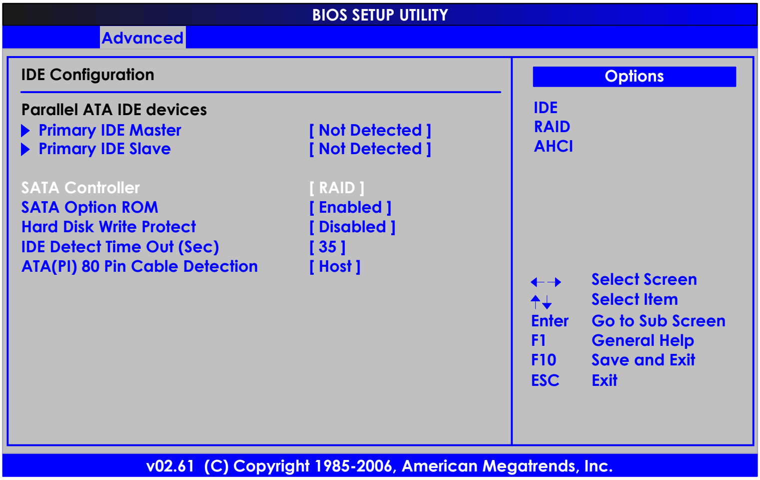
Configure USB (Universal Serial Bus) supports.

CPU CONFIGURATION



Items	Description
Manufacturer	The name of company manufacturer: VIA Technologies Inc.
VIA C7 Processor 1000MHz	Type of Processor used: VIA C7 1GHz
Frequency	Processor speed: 1GHz
FSB Speed	Front Side Bus speed: 400MHz
Cache L1	Processor Level 1 Cache
Cached L2	Processor Level 2 Cache
Ratio Actual Value	
CMPXCHG8B instruction support	

IDE CONFIGURATION



SATA Controller

Controls the features of the Serial ATA controller within the South Bridge. Serial ATA is the latest generation of the ATA interface. Serial ATA hard drives deliver transfer speeds of up to 300MB/sec.

Setting	Description
IDE	Supports two PATA hard disk drives. Disables RAID and AHCI function.
RAID	Only SATA supports RAID and AHCI function
AHCI	Enable the AHCI function such as Native Command Queuing and Hot Plug function

SATA Option ROM

Settings: [Disabled Enabled]

Hard Disk Write Protect

Protects the hard disk from copying and writing.

Settings: [Disabled, Enabled]

IDE Detect Time Out (Sec)

Sets the time for the BIOS to delay the initialization of IDE devices. It enables IDE devices to have more time to spin up before being initialized by the BIOS.

Settings: [0, 5, 10, 15, 20, 25, 30, 35]

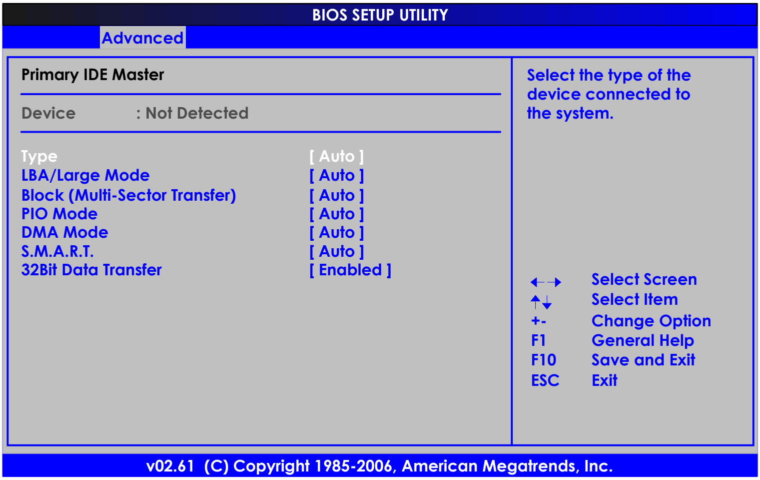
> **Note:**
> Set it to default value 0 if you are not using old IDE devices.

ATA(PI) 80 Pin Cable Detection

This feature allows the IDE controller and IDE device to detect the type of IDE cable that is being used.

Setting	Description
Host & Device	IDE controller and IDE device will detect the types of IDE cable used.
Host	IDE controller will detect the types of IDE cable used.
Device	IDE device will detect the types of IDE cable used.

PRIMARY IDE MASTER / IDE SLAVE



Type

This setting use to select the type of Primary Master IDE drive connected to the system. Select “Auto” to detect IDE drives automatically.

Settings: [Not Installed, Auto, CD/DVD, ARMD]

LBA/Large Mode

This setting allows to disable or enable(Auto) the LBA capacity.

Setting	Description
Disabled	Disables LBA Mode
Auto	Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.

Block (Multi-Sector Transfer)

This setting allows you to set the numbers of sectors.

Setting	Description
Disabled	The data transfer from and to the device occurs one sector at a time.
Auto	The data transfer from and to the device occurs multiple sectors at a time if the device supports it.

PIO Mode

Set Programmed Input/Output Mode for the Master IDE drive.

Setting	Description
Auto	Auto-detect the maximum PIO mode supported by the IDE drives.
0	Use PIO mode 0 for the IDE drive
1	Use PIO mode 1 for the IDE drive
2	Use PIO mode 2 for the IDE drive
3	Use PIO mode 3 for the IDE drive
4	Use PIO mode 4 for the IDE drive

Note:

Normal setting should be set to “Auto.” To auto-detect the maximum supported PIO mode.

DMA Mode

This setting use to select the Direct Memory Access (DMA) mode.

Setting	Description
Auto	Auto detect
SWDMAn	SingleWordDMAn
MWDMAn	MultiWordDMAn
UDMan	UltraDMAn

S.M.A.R.T.

This feature enables or disables the Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.). The S.M.A.R.T technology main function is to monitor the storage devices (hard disk drives) health and status. It enables a report for the possible problem and predicts future failure of storage devices.

Settings: [Auto, Disabled, Enabled]

Note:

Normally set to “Disabled”, to avoid decrease of system performance.

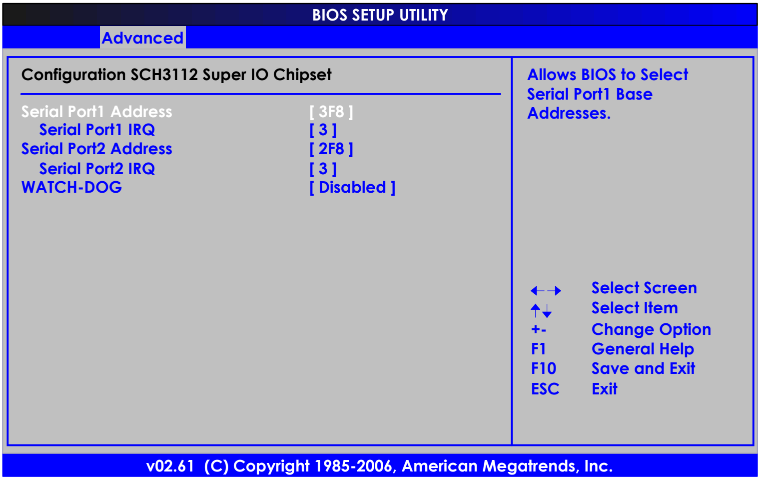
32 Bit Data Transfer

Enabling this setting allows for 32-bit data transfers between the processor and the PCI bus.

Settings: [Disabled, Enabled]

> **Note:**
> Recommend set to “Enabled”, to increase of system performance.

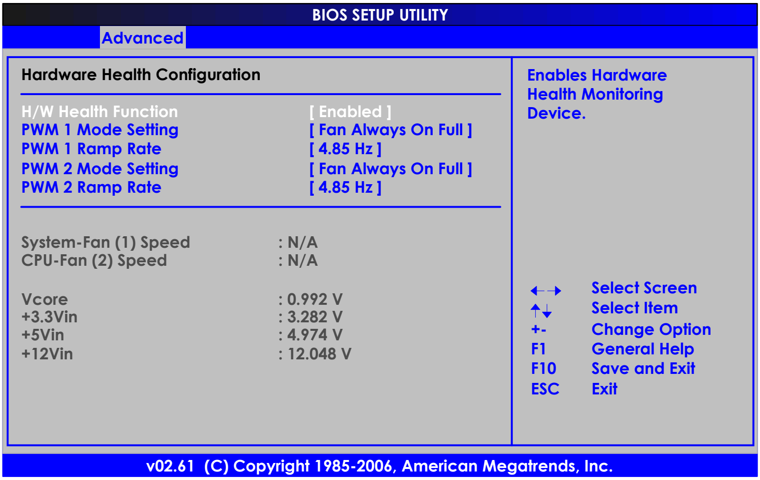
SUPER IO CONFIGURATION



Configure SCH3112 Super I/O Chipset

Items	Description
Serial Port 1 Address	Sets the base I/O port 1 address for the onboard serial port. Settings: [Disabled, 3F8, 3E8, 2E8]
Serial Port 1 IRQ	Sets the base I/O port 1 IRQ for the onboard serial port. Settings: [3, 4, 10, 11]
Serial Port 2 Address	Sets the base I/O port 2 address for the onboard serial port. Settings:[2F8, 3E8, 2E8]
Serial Port 2 IRQ	Sets the base I/O port 2 IRQ for the onboard serial port. Settings: [3, 4, 10, 11]
Watch-Dog	Allows BIOS to select Watch-Dog support. Settings: [Disabled, Enabled]

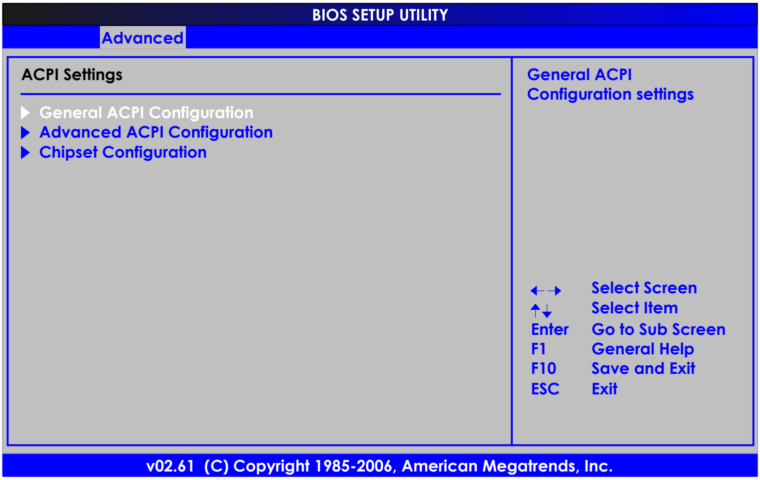
HARDWARE HEALTH CONFIGURATION



The PC Health Status displays the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and fan speeds.

Items	Description
H/W Health Function	Enables Hardware Health Monitoring Device. Settings: [Disabled, Enabled]
PWM 1 Mode Setting	PWM Configuration Mode Setting. Settings: [Auto Fan Mode, Fan Always On Full, Fan Disable Mode, fan Manually Mode]
PWM 1 Ramp Rate	If enable, limits the amount of change in the PWM duty cycle over a specified period of time. Settings: [4.85Hz, 9.62Hz, 14.49Hz, 24.39Hz, 38.46Hz, 55.56Hz, 100Hz, 200Hz]
PWM 2 Mode Setting	PWM Configuration Mode Setting. Settings: [Auto Fan Mode, Fan Always On Full, Fan Disable Mode, fan Manually Mode]
PWM 2 Ramp Rate	If enable, limits the amount of change in the PWM duty cycle over a specified period of time. Settings: [4.85Hz, 9.62Hz, 14.49Hz, 24.39Hz, 38.46Hz, 55.56Hz, 100Hz, 200Hz]

ACPI CONFIGURATION



General ACPI Configuration

General Advanced Configuration and Power Interface (ACPI) configuration setting and power management.

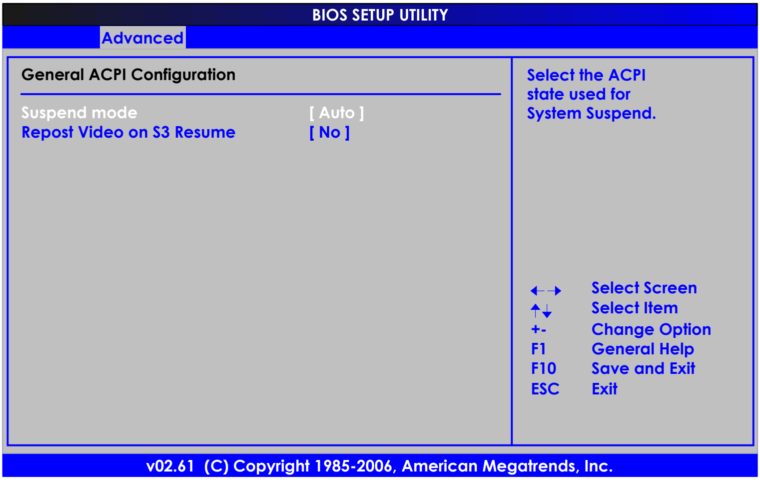
Advanced ACPI Configuration

Advanced configuration setting. Use this section to configure additional ACPI option.

Chipset Configuration

Chipset Advanced Configuration and Power Interface (ACPI) related configuration settings.

GENERAL ACPI CONFIGURATION



Suspend Type

Select the ACPI state used for System Suspend.

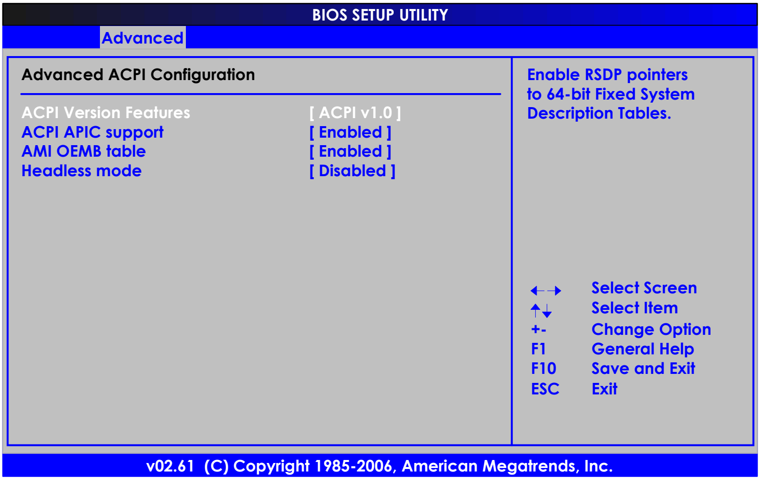
Setting	Description
S1(POS)	S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system contexts.
S3(STR)	S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.
Auto	Depend on the OS to select S1 or S3.

Repost Video on S3 Resume

Select whether to run VGA BIOS if resuming from S3 state.

Settings: [No, Yes]

ADVANCED ACPI CONFIGURATION



ACPI Version Features

Enable RSDP pointers to 64-bit Fixed System Description Tables.

Settings: [ACPI v1.0, ACPI v2.0, ACPI v3.0]

ACPI APIC Features

Include ACPI APIC table pointer to RSDT pointer list.

Settings: [Disabled, Enabled]

AMI OEMB Table

Include OEMB table pointer to R(X)SDT pointer lists.

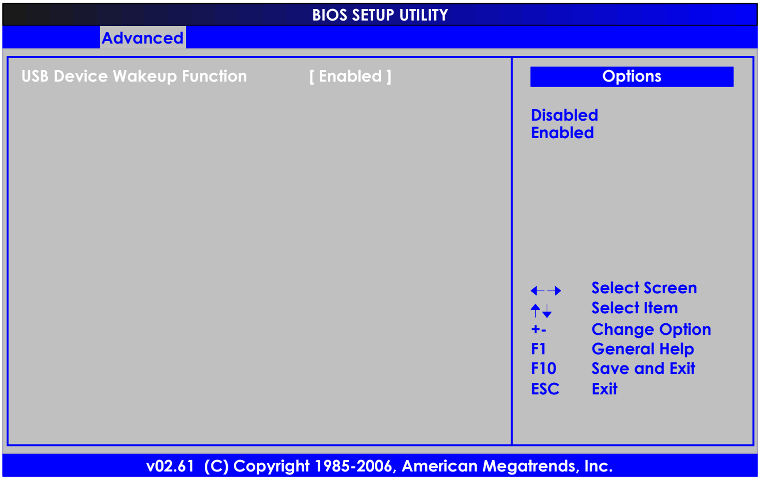
Settings: [Disabled, Enabled]

Headless Mode

Headless operation mode through ACPI.

Settings: [Disabled, Enabled]

CHIPSET ACPI CONFIGURATION



USB Device Wakeup Function

Settings: [Disabled, Enabled]

APM CONFIGURATION

BIOS SETUP UTILITY

Advanced

Setting	Value
Power Management/APM	[Enabled]
Power Button Mode	[On/Off]
Suspend Power Saving Type	[C3]
Restore on AC/Power Loss	[Last State]
Standby Time Out	[Disabled]
Suspend Time Out	[Disabled]
Hard Disk Time Out (Minute)	[Disabled]
Green PC Monitor Power State	[Suspend]
Video Power Down Mode	[Suspend]
Hard Disk Power Down Mode	[Suspend]
Advanced Monitor Events Controls	
Display Activity	[Ignore]
Monitor IRQ3	[Monitor]
Monitor IRQ4	[Ignore]
Monitor IRQ5	[Ignore]
Monitor IRQ7	[Ignore]
Monitor IRQ9	[Ignore]
Monitor IRQ10	[Ignore]
Monitor IRQ11	[Ignore]
Monitor IRQ13	[Ignore]
Monitor IRQ14	[Monitor]
Monitor IRQ15	[Ignore]
Advanced Resume Events Controls	
Resume On Ring	[Disabled]
Resume On LAN	[Disabled]
Resume On PME#	[Disabled]
Resume On KBC	[Disabled]
Wake-Up Key	[Any Key]
Resume On PS/2 Mouse	[Disabled]
Resume On RTC Alarm	[Disabled]

Options

Disabled
Enabled

Key	Function
←→	Select Screen
↑↓	Select Item
+-	Change Option
F1	General Help
F10	Save and Exit
ESC	Exit

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Power Management/APM

Settings: [Disabled, Enabled]

Power Button Mode

Settings: [On/Off, Standby, Suspend]

Suspend Power Saving Type

Settings: [C3, S1]

Restore on AC/Power Loss

Settings: [Power Off, Power On, Last State]

Standby Time Out

Settings: [Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min]

Suspend Time Out

Settings: [Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min]

Hard Disk Time Out (Minute)

Settings: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Green PC Monitor Power State

Settings: [Standby, Suspend, Off]

Video Power Down Mode

Settings: [Disabled, Standby, Suspend]

Hard Disk Power Down Mode

Settings: [Disabled, Standby, Suspend]

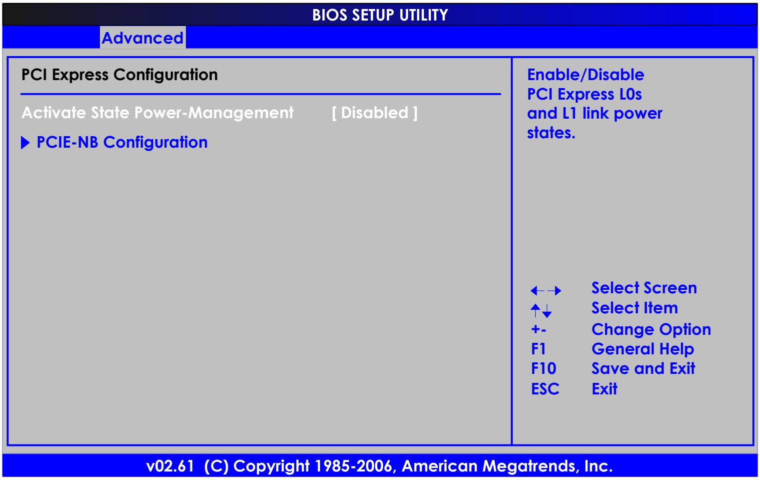
Advanced Monitor Events Controls

Items	Description
Display Activity	Settings: [Ignore, Monitor]
Monitor IRQ3	Settings: [Ignore, Monitor]
Monitor IRQ4	Settings: [Ignore, Monitor]
Monitor IRQ5	Settings: [Ignore, Monitor]
Monitor IRQ7	Settings: [Ignore, Monitor]
Monitor IRQ9	Settings: [Ignore, Monitor]
Monitor IRQ10	Settings: [Ignore, Monitor]
Monitor IRQ11	Settings: [Ignore, Monitor]
Monitor IRQ13	Settings: [Ignore, Monitor]
Monitor IRQ14	Settings: [Ignore, Monitor]
Monitor IRQ15	Settings: [Ignore, Monitor]

Advanced Resume Events Controls

Items	Description
Resume On Ring	Settings: [Disabled, Enabled]
Resume On LAN	Settings: [Disabled, Enabled]
Resume On PME#	Settings: [Disabled, Enabled]
Resume On KBC	Settings: [Disabled S3, S3/S4/S5]
Wake Up Key	Settings: [Any Key]
Resume On PS/2 Mouse	Settings: [Disabled, Enabled]
Resume On RTC Alarm	Settings: [Disabled, Enabled]

PCI EXPRESS CONFIGURATION

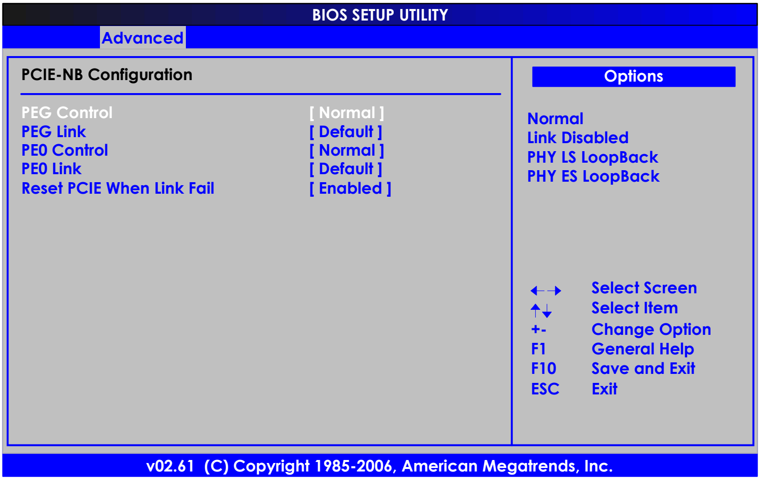


Activate State Power-Management

Enable/Disable PCI Express L0s and L1 link power states.

Settings: [Disabled, Enabled]

PCI-NB CONFIGURATION



PEG Control

Settings: [Normal, Link Disabled, PHY LS LoopBack, PHY ES LoopBack]

PEG Link

A feature allows you to change the PCI Express x16 mode to other mode.

Settings: [x1, x2, x4, x8, x16]

PE0 Control

Settings: [Normal, Link Disabled, PHY LS LoopBack, PHY ES LoopBack]

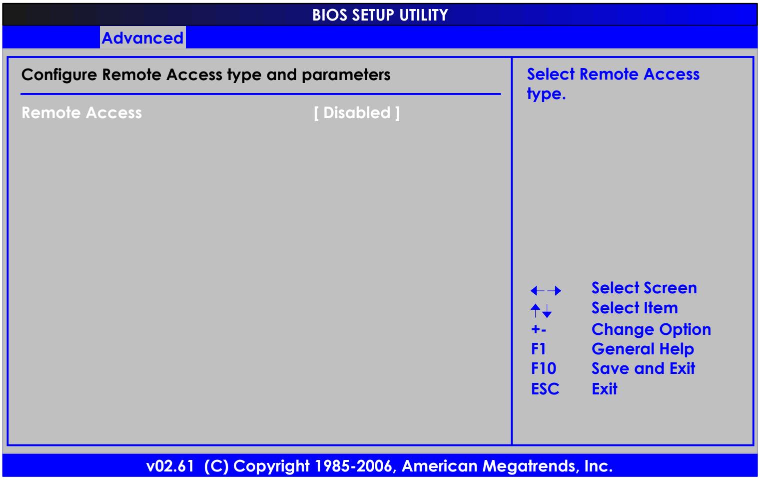
PE0 Link

Settings: [Default, x1, x2, x4]

Reset PCIE When Link Fail

Settings: [Disabled, Enabled]

REMOTE ACCESS CONFIGURATION

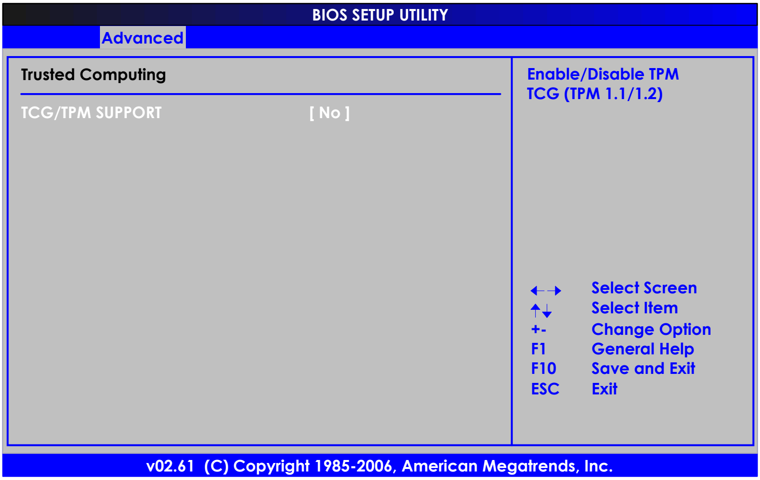


Remote Access

Configure Remote Access type and parameters.

Settings: [Disabled, Enabled]

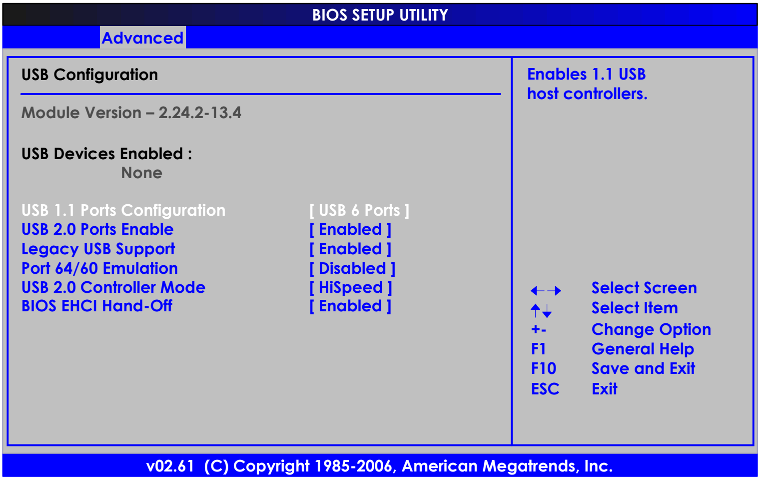
TRUSTED COMPUTING



TCG/TPM Support

Settings: [No, Yes]

USB CONFIGURATION



USB 1.1 Ports Configuration

Enables 1.1 USB host controller.

Settings: [Disabled, USB 2 Ports, USB 4 Ports, USB 6 Ports]

USB 2.0 Ports Enable

Enable or disable Universal Serial Bus 2.0.

Settings: [Disabled, Enabled]

Legacy USB Support

This features allows the support of legacy USB devices such as mouse and keyboard.

Setting	Description
Disabled	Disables the legacy USB support
Enabled	Enabled supports for legacy USB
Auto	Automatic managing of support for legacy USB devices.

Port 64/60 Emulation

This setting enables full legacy support for operating systems that do not natively support USB.

Setting	Description
Disabled	Emulate I/O ports 60h/64h
Enabled	Not emulate I/O ports 60h/64h

USB 2.0 Controller Mode

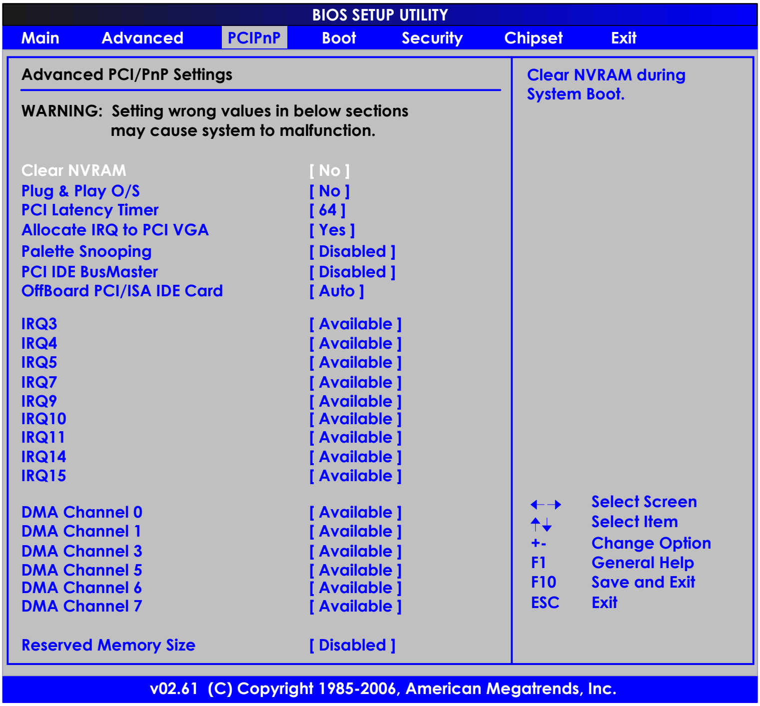
Auto decide USB device operation mode.

Setting	Description
FullSpeed	All of USB Device operated on full speed mode
HiSpeed	If USB device was high speed device, then it operated on high speed mode. If USB device was full/low speed device, then it operated on full speed mode.

BIOS EHCI Hand-Off

Settings: [Disabled, Enabled]

ADVANCED PCI/PNP SETTINGS



Warning:

Setting a wrong value in section below may cause system malfunction.

Clear NVRAM

Clear Non-Volatile Random Access Memory(NVRAM) during system boot.

Settings: [No, Yes]

Plug & Play O/S

Setting	Description
No	Lets the BIOS configure all the devices in the system.
Yes	Lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.

PCI Latency Timer

This setting is use to adjust the PCI clocks for PCI device latency timer.

Settings: [32, 64, 96, 128, 160, 192, 224, 248]

Allocate IRQ to PCI VGA

This setting allows you to assign IRQ to the VGA card.

Setting	Description
Yes	Assign IRQ to PCI VGA card if the card requests IRQ.
No	Does not assign IRQ to PCI VGA card even if card requests an IRQ.

Palette Snooping

Setting	Description
Disabled	
Enabled	Informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.

PCI IDE BusMaster

Setting	Description
Disabled	Does not use PCI busmastering.
Enabled	BIOS uses PCI busmastering for reading/writing to IDE drives.

OffBoard PCI/ISA IDE Card

Set to the PCI slot number that is holding the card.

Settings: [Auto, PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot4, PCI Slots5, PCI Slots6]

IRQ3 / IRQ4 / IRQ5 / IRQ7 / IRQ9 / IRQ10 / IRQ11 / IRQ14 / IRQ15

Setting	Description
Available	Specified IRQ is available to be use by PCI/PnP devices.
Reserved	Specified IRQ is reserved for use by Legacy ISA devices.

DMA Channel 0 / 1 /3 /5 /6 / 7

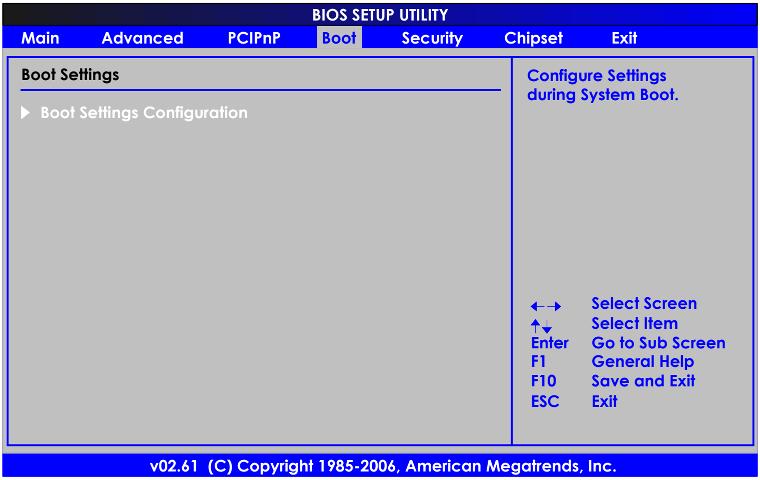
Setting	Description
Available	Specified DMA is available to be use by PCI/PnP devices.
Reserved	Specified DMA is reserved for use by Legacy ISA devices.

Reserved Memory Size

Set the size of memory block to reserve for legacy ISA devices.

Settings: [Disabled, 16k, 32k, 64k]

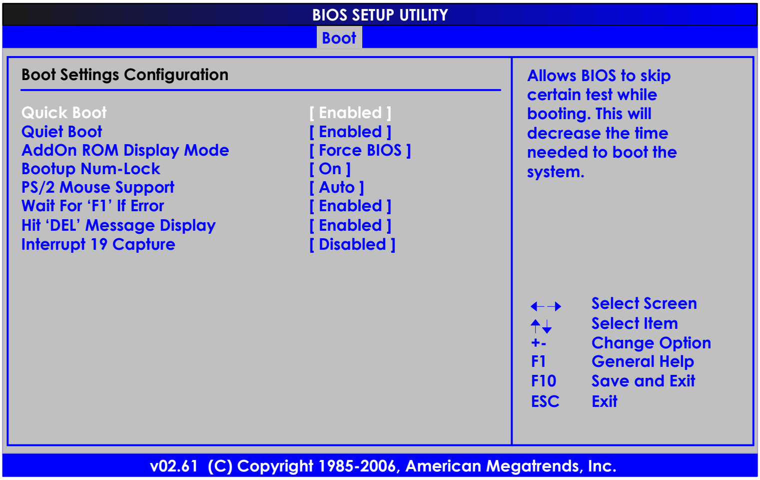
BOOT SETTINGS



Boot Settings Configuration

Configure settings during System Boot.

Boot Settings Configuration



Quick Boot

This setting allows the BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Settings: [Disabled Enabled]

Quiet Boot

Allows the BIOS to show or hide the normal POST messages

Setting	Description
Disabled	Displays normal POST messaged.
Enabled	Displays OEM logo of POST message.

AddOn ROM Display Mode

Set display mode of Option ROM.

Settings: [Force BIOS, Keep Current]

Bootup-Num-Lock

Select Power-on state for Numlock.

Settings: [Off, On]

PS/2 Mouse Support

Select support for PS/2 Mouse.

Settings: [Disabled, Enabled, Auto]

Wait For ‘F1’ If Error

Wait for “F1” key to be pressed of error occurs.

Setting	Description
Disabled	When an error detected the BIOS will stop the boot sequence.
Enabled	Even an error is detected the BIOS will not stop the boot sequence.

Hit ‘DEL’ Message Display

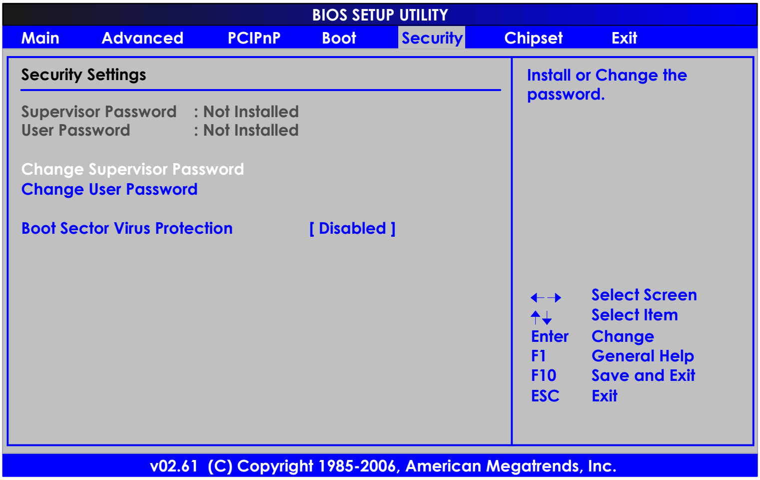
Press “DEL” to run Setup in POST.

Settings: [Disabled, Enabled]

Interrupt 19 Capture

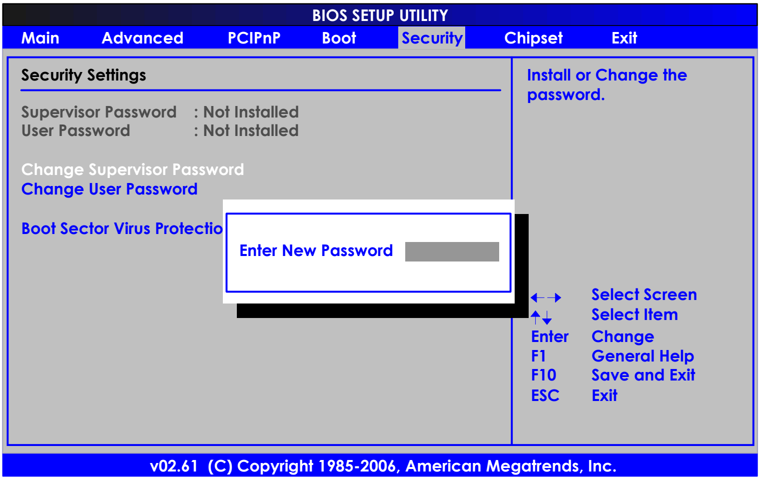
Setting	Description
Disabled	Will not be able to trap Interrupt 19.
Enabled	Allows option ROM BIOS to trap Interrupt 19 during boot process.

SECURITY SETTINGS



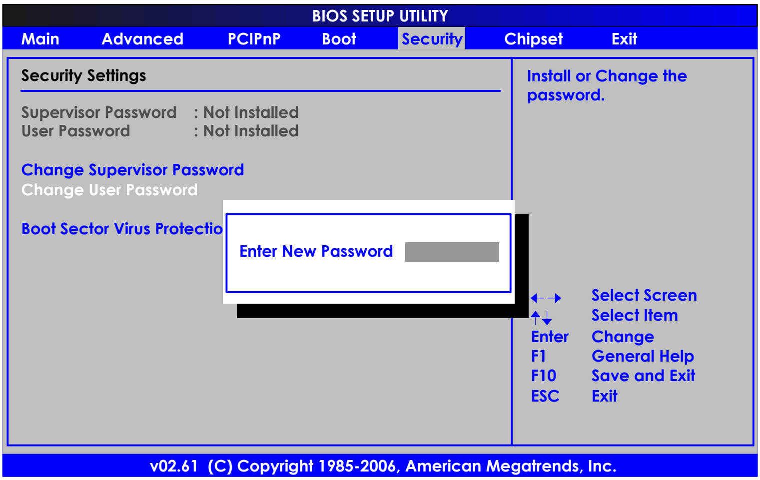
Change Supervisor Password

Install or Change the password.



Change User Password

Install or Change the password.



This option is for setting a password for entering BIOS Setup. When a password has been set, a password prompt will be displayed whenever BIOS Setup is run. This prevents an unauthorized person from changing any part of your system configuration.

There are two types of passwords you can set. A supervisor password and user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be changed.

To set the password, type the password (up to eight characters in length) and press <Enter>. The password typed now will clear any previously set password from CMOS memory. The new password will need to be reentered to be confirmed. To cancel the process press <Esc>.

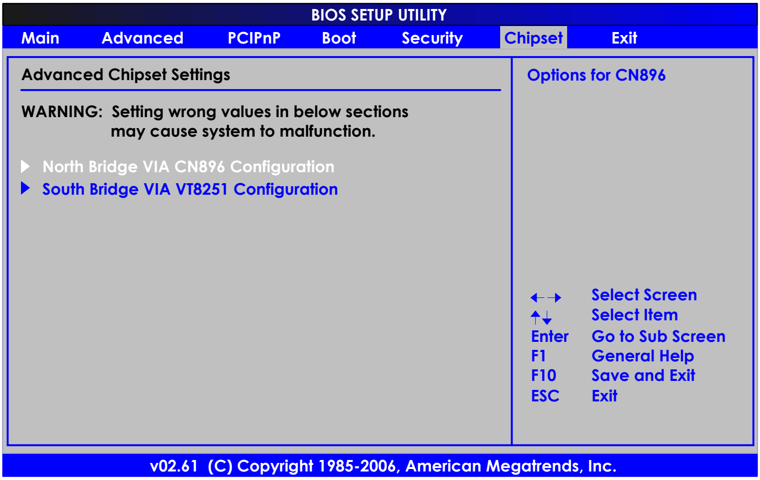
To disable the password, press <Enter> when prompted to enter a new password. A message will show up to confirm disabling the password. To cancel the process press <Esc>.

Additionally, when a password is enabled, the BIOS can be set to request the password each time the system is booted. This would prevent unauthorized use of the system. See “Security Option” in the “Advanced BIOS Features” section for more details.

Boot Sector Virus Protection

Setting	Description
Disabled	Disabled the Boot Sector Virus protection.
Enabled	Activate the Boot Sector Virus Protection to protect the system from boot sector viruses.

ADVANCED CHIPSET SETTINGS



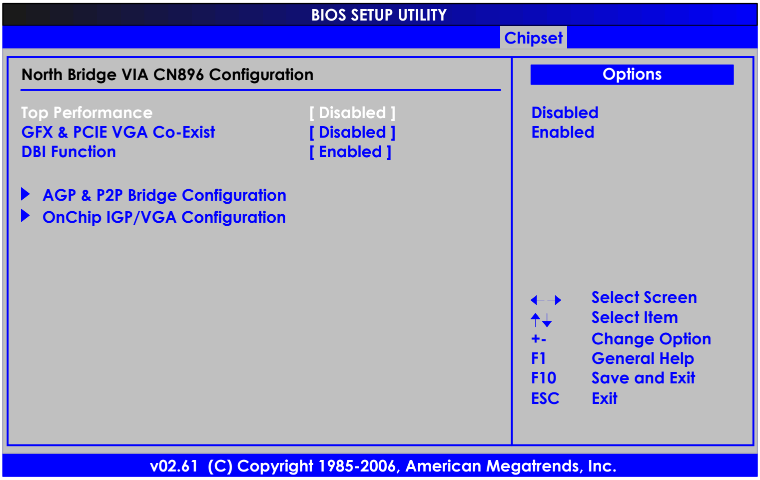
North Bridge VIA CN896 Configuration

Options for VIA CN896 North Bridge.

South Bridge VIA VT8251 Configuration

Options for VIA VT8251 South Bridge.

North Bridge VIA CN896 Configuration



Warning:
Setting a wrong value in section below may cause system malfunction.

Top Performance

Settings: [Disabled, Enabled]

GFX & PCIE VGA Co-Exist

Settings: [Disabled, Enabled]

DBI Function

Setting	Description
Disabled	Use DBI (Dynamic Bus Inversion) scheme
Enabled	Does not use the DBI (Dynamic Bus Inversion) scheme

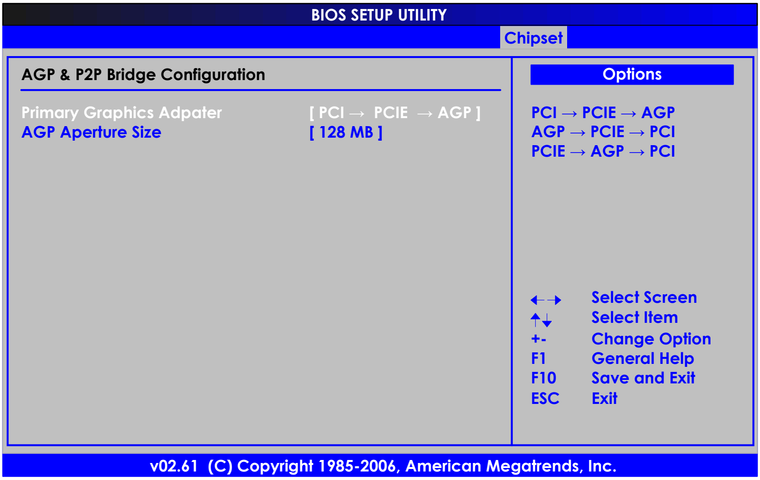
AGP & P2P Bridge Configuration

Options for AGP

OnChip IGP/VGA Configuration

Options for OnChip IGP

AGP & P2P BRIDGE CONFIGURATION



Primary Graphics Adapter

This setting allows to select whether to boot the system using the PCI Express graphics card, AGP graphics card or the PCI graphics card.

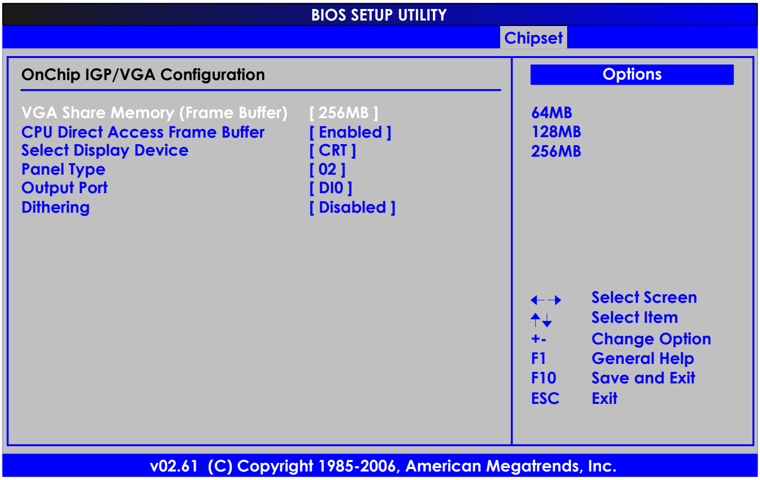
Settings: [PCI → PCIE → AGP, AGP → PCIE →PCI, PCIE →AGP →PCI]

AGP Aperture Size

This setting controls how much memory space can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Settings: [32MB, 64MB, 128MB, 256MB, 512MB, 1GB]

ONCHIP IGP/VGA CONFIGURATION



VGA Share Memory (Frame Buffer)

This setting allows you to select the amount of system memory that is allocated to the integrated graphics processor.

Settings: [64MB, 128MB, 256MB]

CPU Direct Access Frame Buffer

This setting allows you to control the CPU access to the section of system memory use by integrated graphics processor.

Settings: [Disabled, Enabled]

Select Display Device

This setting refers to the type of display being used with the system.

Settings: [CRT, LCD, CRT+LCD]

Panel Type

This setting refers to the native resolution of the display being used with the system.

Settings: [Key in a HEX number ranged between 0000~000F]

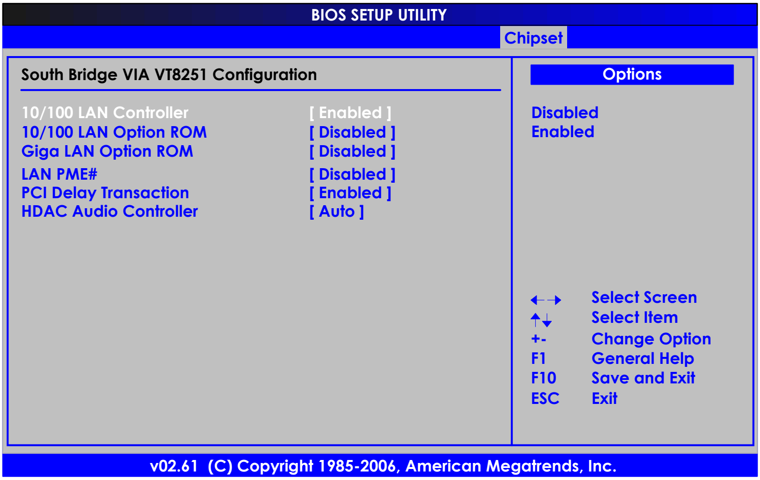
Output Port

Settings: [DI0, DI1]

Dithering

Setting	Description
Disabled	Image displayed on LCD will not dither.
Enabled	Image displayed on LCD will dither.

SOUTH BRIDGE VIA VT8251 CONFIGURATION



10/100 LAN Controller

This setting allows to enable or disable the onboard 10/100 LAN controller.

Settings: [Disabled, Enabled]

10/100 LAN Option ROM

Decide whether to invoke the boot ROM of the onboard 10/100 LAN chip.

Settings: [Disabled, Enabled]

Giga LAN Option ROM

Decide whether to invoke the boot ROM of the onboard Giga LAN chip.

Settings: [Disabled, Enabled]

LAN PME#

Settings: [Disabled, Enabled]

PCI Delay Transaction

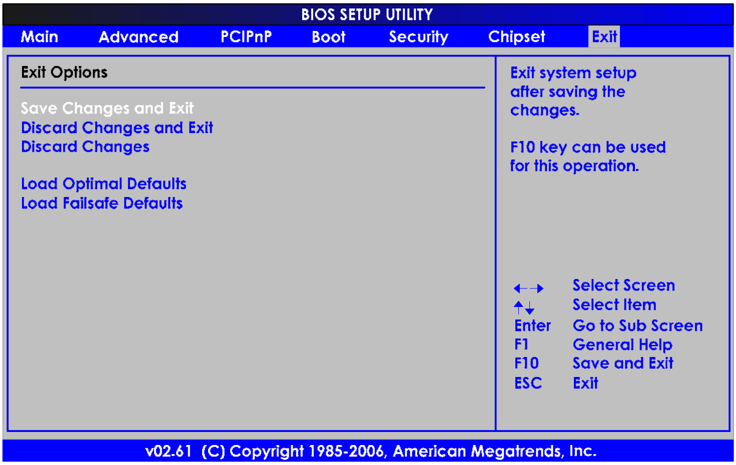
Settings: [Disabled, Enabled]

HDAC Audio Controller

Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard VIA High Definition Audio Codec (VT1708A) controller will be enabled; otherwise, it is disabled. Disable the controller if another controller card is being used to connect to an audio device.

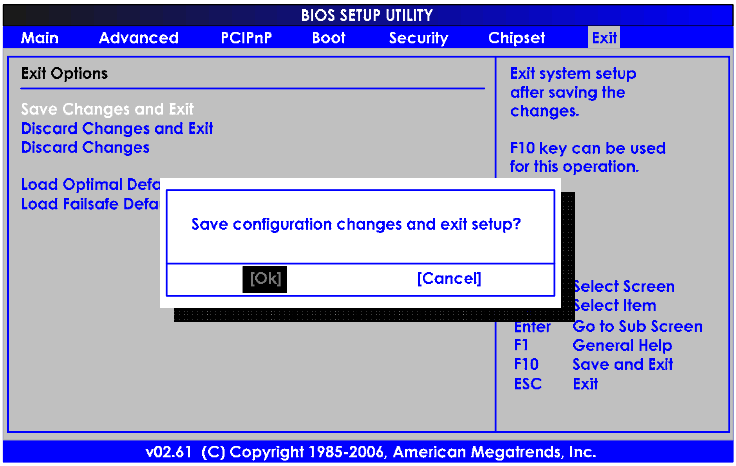
Setting	Description
Auto	Enables onboard controller if audio device is detected
Disabled	Turn off onboard controller to allow external controller

EXIT OPTIONS



Save Changes and Exit

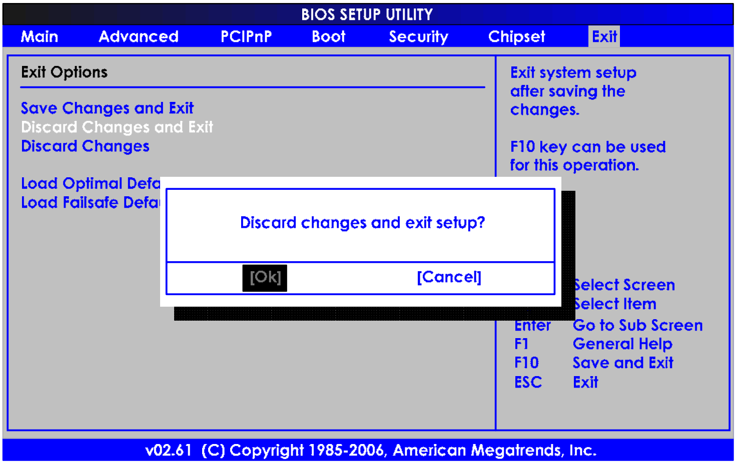
Exit system setup after saving the changes.



Select “Ok” and press “Enter” to save any changes made and exit the program. Select “Cancel” and press “Enter” will cancel the exit request.

Discard Changes and Exit

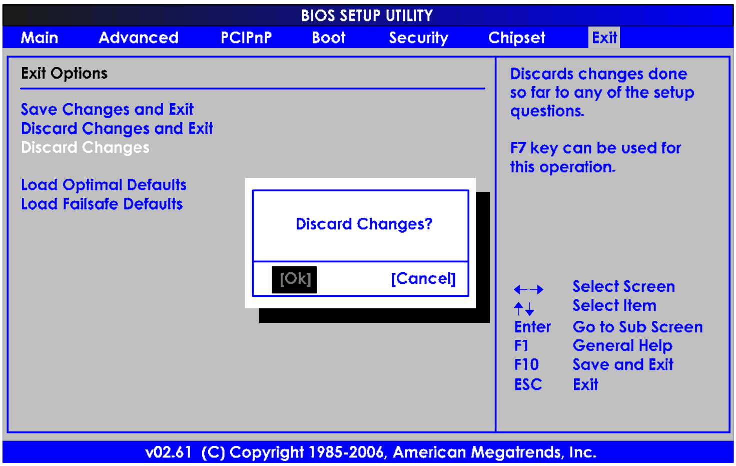
Exit system setup without saving any changes.



Select “Ok” and press “Enter” to discards any changes and exit the program.

Select “Cancel” and press “Enter” will cancel the discard/exit request.

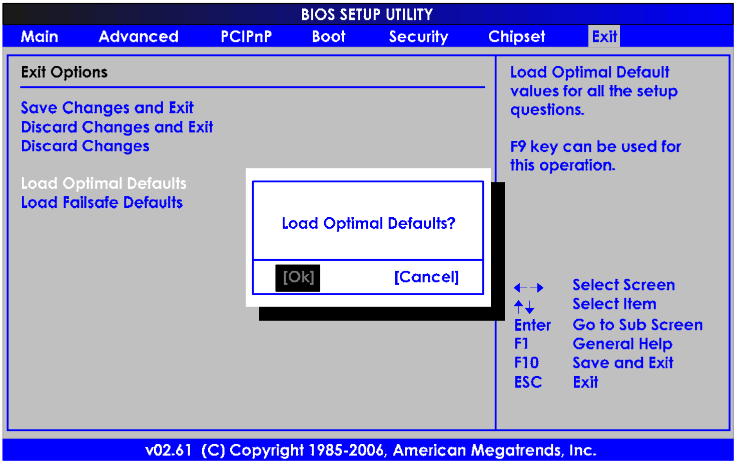
Discard Changes



Select “Ok” and press “Enter” to discards any changes.

Select “Cancel” and press “Enter” will cancel the discard/exit request.

Load Optimal Defaults

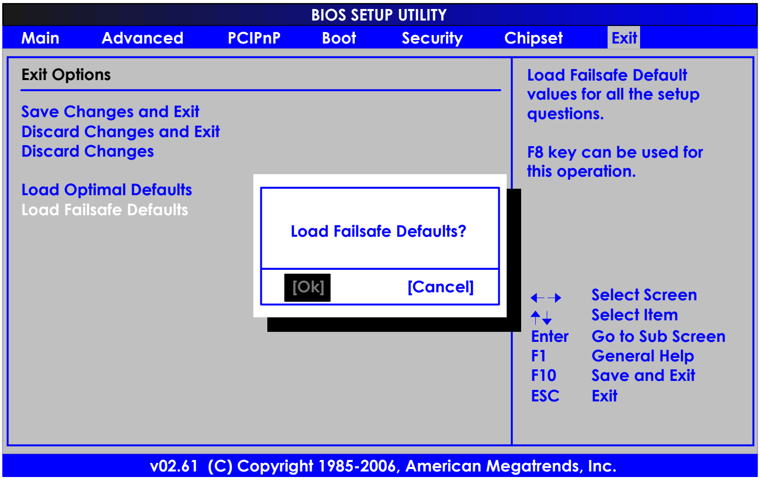


This option is for restoring all the default optimized BIOS settings. The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

Select "Ok" and press "Enter" to load the defaults optimal BIOS values.

Select "Cancel" and press "Enter" will cancel the load optimal defaults request.

Load Failsafe Defaults



This option is for restoring all the default fail-safe BIOS settings. These values are set by the mainboard manufacturer to provide a stable system with basic performance.

Select “Ok” and press “Enter” to loads the default fail-safe BIOS values.

Select “Cancel” and press “Enter” will cancel the load failsafe defaults request.

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CHAPTER 4

Driver Installation

This chapter gives you brief descriptions of each mainboard driver and application. You must install the VIA chipset drivers first before installing other drivers such as audio or VGA drivers. The applications will only function correctly if the necessary drivers are already installed.

DRIVER UTILITIES

Getting Started

The mainboard includes a Driver Utilities CD that contains the driver utilities and software for enhancing the performance of the mainboard. If the CD is missing from the retail box, please contact the local dealer for the CD.

> **Note:**
> The driver utilities and software are updated from time to time. The latest updated versions are available at http://www.viaembedded.com/

Running the Driver Utilities CD

To start using the CD, insert the CD into the CD-ROM or DVD-ROM drive. The CD should run automatically after closing the CD-ROM or DVD-ROM drive. The driver utilities and software menu screen should then appear on the screen. If the CD does not run automatically, click on the “Start” button and select “Run...” Then type: "D:\Setup.exe".

Note:
D: might not be the drive letter of the CD-ROM/DVD-ROM in your system.

CD CONTENT

☒ **VIA 4in1 Drivers:** Contains VIA ATAPI Vendor Support Driver (enables the performance enhancing bus mastering functions on ATA-capable Hard Disk Drives and ensures IDE device compatibility), AGP VxD Driver (provides service routines to your VGA driver and interface directly to hardware, providing fast graphical access), IRQ Routing Miniport Driver (sets the system's PCI IRQ routing sequence) and VIA INF Driver (enables the VIA Power Management function).

☒ **VIA Graphics Driver:** Enhances the onboard VIA graphic chip.

☒ **VIA Audio Driver:** Enhances the onboard VIA audio chip.

☒ **VIA USB 2.0 Driver:** Enhances VIA USB 2.0 ports.

☒ **VIA LAN Driver:** Enhances the onboard VIA VT6103L 10/100M LAN chip.

☒ **VIA GigaLAN Driver:** Enhances the onboard optional VIA VT6130 10/100/1000M LAN chip.

☒ **VIA RAID Driver:** Support for RAID devices.